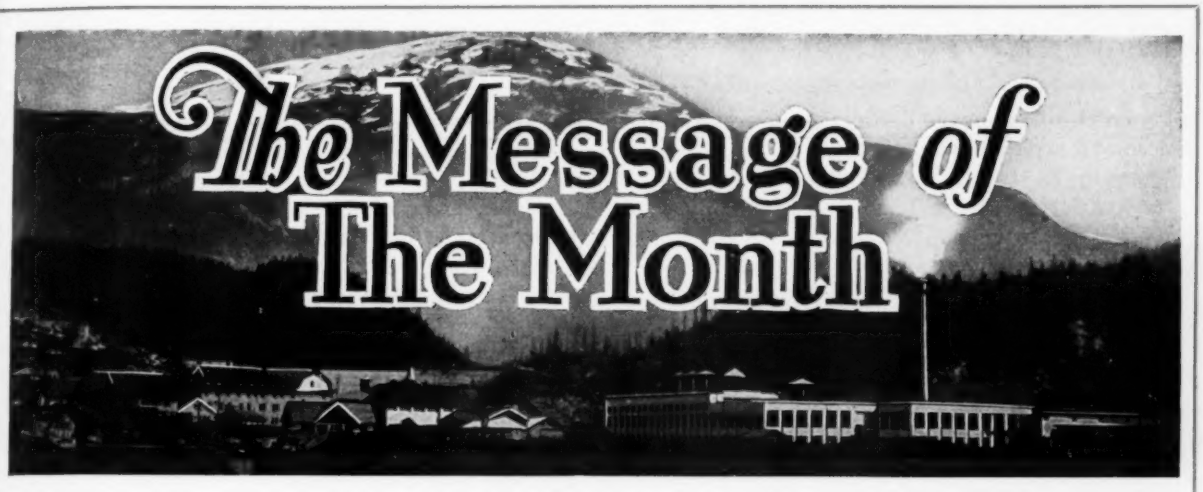

A Remedy

THE business of manufacturing and selling useful articles of merchandise in this country is a great, industrial, commercial game.

The manufacture and selling of paper, an essential commodity, is part and parcel of this great national game.

As in all games, certain rules and regulations govern their activities, and likewise, in this great national game of producing and selling commodities, certain qualifications and regulations, surrounding the participation in games, have been laid down.

The reason that we have these rules and regulations and umpires is to keep the game clean and free from unfair competitive tactics.

The paper game is suffering from unfair competition. The rules governing the game, we believe, have been violated, the competitors are complaining.

The rules and regulations governing the manufacture and sale of articles of merchandise are found in what is known as the "Anti-Trust Act." We herewith print below a summary of these rules written by one of the best umpires this country has ever known. The summary is taken verbatim from a volume entitled "The Anti-Trust Act and The Supreme Court" by the late Chief Justice, William Howard Taft.

> "What, then, is the result as to the lawful business, and especially the big business of our country under the statute and these decisions? It is this:
>
> "It is possible for the owners of a business of manufacturing and selling useful articles of merchandise so to conduct their business as not to violate the inhibitions of the anti-trust law and yet to secure to themselves the benefit of the economies of management and of production due to the concentration under one control of large capital and many plants.
>
> "If they use no other inducement than the constant low price of their product and its good quality to attract custom, and their business is a profitable one, they violate no law.
>
> "But, if they attempt, by a use of their preponderating capital and by a sale of their goods temporarily at unduly low prices, to drive out of business their competitors, or if they attempt, by price-controlling contracts with their patrons and threats of non-dealing except upon such contracts, or by other methods of a similar character, to use the largeness of their resources and the extent of their output compared with the country's total output as a means of compelling custom and frightening off competition, then they disclose a purpose to restrain trade and to establish a monopoly and violate the act.
>
> "The object of the anti-trust law was to suppress the abuses of business of the kind described. It was not to interfere with a great volume of capital which, concentrated under one organization, reduced the cost of production and made its profits thereby and took no advantage of its size by methods akin to duress to stifle competition with it."

In other words—the bigness of the business is no violation of the Act, but the conduct of the business on an unprofitable basis is, for "if they (of large capital and many plants) use no other inducement than the constant low price of their product (paper) and its good quality to attract custom, **and their business** (paper) **is a profitable one,** they violate no law."

Big business, therefore, is lawful providing it makes profit. The learned Chief Justice seems to

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lay emphasis upon the distinction between a business and a philanthropy.

Again, he stresses "profits."

"It (the anti-trust law) was not to interfere with a great volume of capital which, concentrated under one organization, reduced the cost of production and thereby **made its profits.**"

Where are the "profits" on the paper operations of the International Paper & Power Corporation? By sale of their paper at unduly low prices, they disclose a purpose to restrain trade and to establish a monopoly and violate the act.

And the unfair competition is so unfair—the diversion of paper products to keep paper prices down.

Rules are rules and laws are laws, not always and forever to be set at naught or ignored.

There is the long, lean, strong arm of Justice which will, when her aid is invoked, reach out and effectively restrain the violation of her acts.

Therein lies one remedy for the independent paper manufacturer who possesses no paying power with which to offset his paper losses. And we are well persuaded there are others.

Making Men Enjoy Their Work

THE republication recently by the Technical Association of the Pulp and Paper Industry of an address on "The Creative Workman," delivered by Robert B. Wolf at a meeting in 1918, is a fresh reminder of the interest which is taken in the problem of making men enjoy their work. It is a problem which has engaged the attention of employers of labor and production engineers, not to mention sociologists, socialists and faddists of various kinds, since a period long antedating Mr. Wolf's exposition of the "use of individual progress records as a means of making work interesting and enjoyable."

After a study of conditions in a pulp mill that make work either pleasurable or distasteful, Mr. Wolf developed a system of recording operations in the form of individual progress records that were designed to place responsibility on the individual worker, make him feel that he was an active partner in the productive activity of the plant and something more than a mere machine. He argued that men craved responsibility, and satisfactory results would not be obtained until our industries were so designed that workmen felt this responsibility.

This was the beginning of a series of efforts by Mr. Wolf, to bring about a different working environment in pulp and paper plants, an environment in which the most fundamental of human impulses, the ego impulse, might be gratified. At the same time he taught that joy in work was a crucial factor of production, and that it was only under conditions where an individual could become a creative workman that he would find joy in work. He showed that responsibility for results, in quality and quantity as well as in economy, was developed in the workman under the operation of a system of individual records, which also afforded competition among the men for a good achievement, apart from any monetary awards that might accrue.

That it is to the interest of the owners of a mill to make work interesting and attractive need not be stressed, but under the system of recording operations referred to, it is never possible for the employer to exploit the employee, because, as Mr. Wolf has said, it will be continually demonstrating to both that the success of any one part of the organization is absolutely dependent upon that of every other part, and therefore upon the success of the whole.

As a practical contribution to the solution of a great industrial problem, that of making working conditions pleasant and giving the worker to understand that achievement will be appreciated, Mr. Wolf's account of his own experiences as a specialist in management is of pertinent present-day interest and value. He does not pose as an efficiency expert, for he believes that efficiency has too often been made an end in itself to be attained at all costs regardless of individual well-being. Particularly pertinent is his advice to build up a real science of the industry. "So far we have been very largely concerned with the art of making paper and not with the science. I am afraid that we have forgotten that we can only have a great art where the organized facts which record the science are so complete and comprehensive that the individual who wishes to express this art can master the laws as recorded in the science. 'Science is organized facts, and art is a science practised,' so that unless we can organize the facts underlying the industry—the chemistry, physics and mechanics of the process—it will be impossible for the men in the industry properly to express the art. The art, however, must be expressed not only through the emotions but also by the mind through the use of the intellect."

Making progress records has become a routine

A PRIMARY PHASE

in which the bulk of the encrusting impurities are removed without bleaching them;

A SECONDARY PHASE

in which the small residue remaining in the fibre is completely bleached out.

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practice in almost every pulp and paper mill of any large tonnage throughout the United States and Canada, and as for the application of science to art it has also grown to a great development since Mr. Wolf urged the necessity of it. We need only point to the foundation and operation of several research laboratories by pulp and paper manufacturers and to the organization of the Canadian Pulp and Paper Research Institute in proof of this.

Alaska

INTEREST in Alaska, that extreme northwestern continent, purchased by the United States from Russia in 1867, has been revived with the talk of pulp and paper mill development there. One of the first of the men now connected with our industry to write of Alaska was Royal S. Kellogg who, in 1910, as an assistant forester in the Forest Service, wrote a treatise on "The Forests of Alaska," which was published as Bulletin 81 of the Forest Service. From this interesting account of forests and waterpowers in the Territory, written twenty years ago, readers will find much that is of pertinent and contemporaneous interest, though references to the utilization of tree species as papermaking raw material are few. At that early date, Mr. Kellogg had advocated the use of Alaskan timber for other purposes than for lumber and said that pulp offered the most promising outlet for the spruce and hemlock which comprise almost the entire forest area in the southeastern region of Alaska. He also noted that there was abundant waterpower for the needs of pulp mills, "and transportation to the States through the inside passage to Seattle would be quick and cheap."

There is much in Bulletin 81 of the Forest Service of interest to the general reader. In an introductory paragraph, we are reminded that the ordinary resident of the United States has no conception of what the Territory of Alaska really is. A brief sketch is given of the salient features of the Territory, which is almost a continent by itself, having no land connection with the United States, from which it is, indeed, far removed. Mr. Kellogg points out that it has an area of 586,000 square miles, or 375,000,000 acres, or more than ten times that of the State of Illinois. From southeastern Alaska to the end of the Aleutian Islands is as far as from Savannah, Ga., to Los Angeles, Cal. Its northernmost and southernmost points are as widely separated as Canada and Mexico. Its range of temperature is greater than that between Florida and Maine.

Alaska is separated from Siberia in Asia by a narrow passage of water which has been known as Bering Strait since its discovery by Vitus Bering in 1728. Bering was a Danish mariner who was employed by Czar Peter of Russia to explore the coast of Siberia. Twelve years later Bering landed on the coast of Alaska and took possession of it in the name of the Czar. How the name Alaska originated is not definitely known, though it is understood to be a corruption of a native word meaning mainland or peninsula. The Territory is bounded on the east by the Province of British Columbia and the Yukon, in which is situated the "Klondike." On the south and southwest it is bounded by the Gulf of Alaska and the Pacific Ocean, and on the north by the Arctic Ocean. Bering Strait and the Arctic Ocean separate Alaska from Siberia on the west.

The Invention of Groundwood

IN the preceding issue of THE PAPER INDUSTRY, mention was made in our "Outline of Paper History" of the invention of mechanical pulp or groundwood by Friedrich G. Keller, who is also believed to be the first manufacturer of a paper sheet from groundwood. While there are other claimants for the honor of having invented the manufacture of paper from mechanical pulp, it is generally conceded, as stated by Carl Hofmann, in his "Treatise on the Manufacture of Paper" (1873), that the idea of grinding wood by pressing blocks of it against a revolving cylinder of sandstone originated with Keller. Credit for perfecting the apparatus to a point where it could be used commercially for the production of mechanical pulp belongs without question to Henry Voelter, a native of Heidenheim, in Wurtemberg, who patented the invention.

The American rights to Voelter's invention were purchased by Albrecht Pagenstecher and Warner Miller, who were the first to manufacture groundwood pulp in this country at Curtisville, now Interlaken, Mass., in 1867. The story was told in interesting fashion by the late Warner Miller at a meeting of the American Paper and Pulp Association held in New York, February 8, 1917. Rag pulp was then mixed with the groundwood to make paper, just as chemical pulp is used in a similar way today.

It is a far cry from Pagenstecher's operation of the Voelter process to present-day methods of continuous magazine grinding, but it is worthy of note that Albrecht Pagenstecher was the organizer and first president of the Laurentide Pulp Company at Grand' Mere, Quebec, the forerunner of the Laurentide Company, now a division of the Canadian Power and Paper Corporation, which has long been noted as among the largest producers of groundwood and newsprint paper in North America.

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Exporting to Argentina

By WILBUR T. GRACEY

This is the first of a series of articles specially prepared for us by Mr. Gracey, who was for over twenty years an American Consul in Latin America and other parts of the world. Mr. Gracey speaks Spanish and several other languages, and during his term as consul was a prolific contributor to "Commerce Reports," has done much constructive work for the Government and American manufacturers and been successful in placing many firms in contact with trade opportunities abroad.

AS one enters the harbor of New York he is greeted by "Liberty" and similarly in Buenos Aires the figure of "Liberty" stands out against the crystalline blue sky, this time located prominently on top of a tower of one of the great buildings.

Landing, you will find that the building is owned by "La Prensa" and is one of the finest newspaper offices in the world, also discovering that other magazines and newspapers are equally magnificently housed.

Entering any of these you will perhaps be surprised to find them up to date printing plants, with the latest types of presses, linotypes and other printing house machinery and doing work comparable with that produced anywhere on earth.

Being in the trade, your thoughts will immediately center on the potentiality of this market for paper and paper products, and if you are already exporting, or contemplate doing so, you will begin to make careful and conscientious inquiries.

You will find the paper trade of the Argentine concentrated in the capital city of Buenos Aires—said to be the wealthiest city in Latin America; the sixth great city of the world; the largest Latin metropolis on earth except Paris.

With a population of approximately 8,000,000, about 80 per cent is **mestizo**—highly educated, luxury loving people resulting from the marriage of Italian, Spanish and Portuguese settlers with the natives.

The imports of paper and paper products annually amounts to between $15,000,000 and $20,000,000 varying in value with the local demands and variations in exchange.

Consulting the customs statistics you will find that practically everything in the paper industry finds a market in this country, and substantial importations under the headings of newsprint, printing paper, writing paper, wrapping paper, cigarette paper, drawing paper, cardboard, bristol board, blotting paper, toilet paper, tissue paper, paper in rolls for telegraph instruments and adding machines, envelopes, printed books, blank books, music, playing cards, calendars, paper collars and cuffs, paper sacks and bags, carbon paper, sandpaper, fly paper, blueprint paper, filter paper, photographic paper, postal cards tracing paper, paper boxes, cardboard for shoes, composition books, labels, paper lanterns, papeteries, maps, engravings etc. paper napkins, visiting cards, photographic mounts, albums, wall paper and miscellaneous manufactures of paper and cardboard.

These products come to the Argentine principally from Belgium, Canada, France, Germany, Great Britain, Italy, Netherlands, Norway, Russia, Spain, Sweden, Switzerland and the United States, our own trade being considerable and constantly growing.

The total exports of paper and paper products from the United States to this market during 1926 was valued at $832,272, which increased in 1927 to $900,621 and in 1928,—the latest available statistics—to $1,197,299.

The following statistics will show the kind and quantity of products which we are supplying to the Argentine Republic:

	Pounds	Value at
Newsprint	3,592,357	$138,793
Writing paper	3,524,562	302,835
Toilet paper	1,247,057	114,570

Book paper coated	658,671	58,792
Sheathing & building paper	1,985,123	71,411
Wallboard of paper & pulp	1,398,375	56,559
Blotting paper	689,907	66,163
Grease and water proof paper	185,327	39,680
Wrapping paper	163,220	17,804
Tissue & crepe	96,378	32,615
Cash register and adding machine tape	260,934	23,085
Paper bags	183,756	16,964
Bristol and bristol board	49,184	3,381
Other paper and strawboard	273,804	16,984
Boxes and cartons	97,054	13,170
Filing folders, index cards, etc.	43,261	14,083
Paper towels and napkins	60,370	8,519
Envelopes	40,372	7,617
Boxboard	54,771	4,122
Wall paper	69,828	2,707
Cover paper	7,163	1,891
Papeteries	7,493	1,570
Other paper products	84,370	153,740
Photographic papers		82,775

The trade has by no means reached the saturation point, and there is no reason why American manufacturers cannot share in the continuing increase.

Statistics of imports as issued by the Argentine government are not entirely satisfactory on which to base our estimates, as they are arrived at by a somewhat arbitrary method. A value is fixed on the products by the government and duties fixed on this fictitious value without any relation to the cost of the products in the exporting countries. As a consequence, the statistics as shown are considerably lower than the actual valuation, and as a general rule from 25 per cent to 30 per cent must be added to these to approximate the actual prices of the commodities.

Methods of Purchase

Practically all of the trade of the Argentine is in the hands of local jobbers, or representatives of foreign manufacturers, or foreign export houses. The principal manufacturers of different countries either have their own offices in the Argentine, or have appointed representatives to act for them.

Jobbing requires a large capital, as firms must be in a position to make immediate deliveries, and often have to carry stock on hand to the value of $500,000 to do a $1,000,000 worth of business annually.

Newsprint trade is pretty closely held in the hands of long established firms, few in number. Other products are handled by the larger firms, as well, but some by commission merchants. The competition is keen in every line.

There are between 40 and 50 representatives of foreign paper concerns located in Buenos Aires, who devote their entire time to this trade. Considerable trade is placed direct with foreign mills, some of this business being secured by the commission houses as well as the jobbers.

The manufacturer who has not exported to the Argentine will realize that in giving consideration to this market he is up against tremendously strong competition and before endeavoring to make sales a careful investigation is imperative.

Where Can Information Be Secured?

Data regarding this trade can be secured from various sources in the United States, and probably the most valuable will be the Bureau of Foreign & Domestic Commerce, Washington, or its branch offices which are located in most of the large cities of the United States. Your local Chamber of Commerce will also be valuable, especially if it acts as one of the Department of Commerce Co-operative offices. A list of the branches and co-operative offices can be secured on application to the Bureau in Washington, and consultation with the director of the nearest branch will probably constitute your initial step.

Supplemental to this will be information secured from the Pan American Union in Washington, the Philadelphia Museum, Philadelphia, the Manufacturers Export Association, New York, the National Association of Manufacturers, New York and the associations in your own trade.

A thorough investigation of market conditions should be undertaken prior to any endeavor to enter the trade—and this applies with equal force to any other Latin American country—and six months, or a year may well be devoted to the collecting and analysing of such information, before taking active steps to enter the market.

An intelligent employee—preferably one familiar with Spanish and Latin American points of view—can segregate this information and prepare a comprehensive report on the possibilities of sale of your particular product and any time or money expended in this preliminary investigation will not be waste, as a complete survey of conditions prior to action is absolutely essential to success in this highly competitive trade.

Numerous publications of the Department of Commerce will be found filled with valuable data, among which may be mentioned "Special Agents Series No. 163 on "Paper, Paper Products and Printing Machinery," for which 20c (the cost of printing) is charged. While this was issued in 1918 and statistically is out of date, the basic information therein is invaluable to anyone contemplating exporting to the Argentine.

American Nation Series, No. 1 "Argentine Republic," Foreign Trade Series, No. 61, "Argentina," American City Series, "Buenos Aires," published by the Pan American Union, Washington, (5c each—cost of printing) will be found filled with items of general interest.

Supplementing these it would be well to secure some idea of Latin American trade methods and points of view by consulting any of the various treaties on exporting such as "Exporting to Latin America" by Filsinger, "Practical exporting" by B. Olney Hough, "Ocean Traffic & Trade" by the same author, or Sheldon's "Export Trade." Also consult the various trade publications relating to Latin America such as: The American Exporter, El Com-

mercio, La Hacienda, American Industries, Exporters Review, Export Trade and Finance, Exporters and Importers Journal, Pan American Bulletin, Pan American Magazine, South American, El Norte Americano, The Pictorial Review, La Revista del Mundo, The Review of the River Platte, The South American Journal (published in London) The Weekly bulletin of the Philadelphia Commercial Museum, Semi-Monthly Bulletin (Nat. Assn. of Manufacturers), The world's markets, Dun's International Review, The export monthly, or Export World and Herald.

The latest available statistics published by the Argentine government give the following comparative figures:

Article		1926		1927	
		Quantity	Value	Quantity	Value
Paper books	tons	20,496	$4,771,578	21,692	$5,049,918
Paper newsprint	tons	92,922	8,652,855	100,487	9,357,388
Paper writing	tons	5,834	1,358,150	5,128	1,193,809
Manufacturies of pasteboard	tons	12,892	1,383,394	15,640	1,652,941
Printed matter, lithographic	tons	1,473	1,423,410	1,234	1,249,406

Among the large users of paper the Argentine government must be considered, as it consumes over $500,000 worth of paper and paper products annually, including such items as hand made paper for banknotes, newsprint for official publications, stationery, drawing paper, blue-print paper, carbon paper, toilet paper and various other paper products used by the various departments. All of the purchases for the government are made through the central office.

Approximately half of the paper consumed in the Argentine is manufactured locally, and this manufacture is growing. Owing to protective tariff these factories can compete successfully with importers.

Purchases for the government are made on strict and comprehensive conditions, and it is practically impossible for any foreign firm to compete unless they have a well-qualified representative on the spot, and are able to make early, or immediate deliveries.

The paper manufacturer who desires to enter this trade should, in the first instance, endeavor to arrange with one of the large American concerns to handle his line, and if this is impossible he can either open his own office there, or perhaps get one of the firms representing European manufacturers of non-competing lines to handle his goods.

The opening of your own office is a very difficult matter, as besides a comprehensive knowledge of your product, the man you send must be familiar with Spanish and with the Argentino's point of view, and it is difficult, if not impossible to find a man who has these qualifications and who is not already connected. The local representative whom you employ must be well paid, and have ample funds for expenses, and it is not likely that you will be able to send a man of your own without an expenditure of approximately $15,000 per annum, possibly more.

It is also probable that in his first six months he will secure few, possibly no orders, and it will only be after he has become thoroughly acquainted with the trade, and made himself **persona grata** with the people connected therewith, that he will begin to secure orders of sufficient importance to warrant his retention. It is more than likely, therefore, that your personal representative will for the first year, or possibly two years, be almost a dead loss, and this must be taken into consideration and provisions made therefor.

A hurried trip of a salesman to the country, with the expectation of his securing orders in the course of a week or even a month's stay, will, in all probability, be valueless, unless your product is somewhat exceptional outside the ordinary line.

The sending of circulars or samples by mail, with expectation of securing orders, is practically waste effort, and is not to be recommended.

One point of particular importance to manufacturers dealing with the Argentine is that paper sizes are almost exclusively by metric measure. Quotations by pounds or inches are useless and practically kill sales.

Generally sales are made in the market on a five months credit basis, ofttimes longer. Buyers practically dictate their own terms in purchasing from European firms and this also makes it difficult for American concerns to compete, unless they have large capital and capable local representatives who can investigate the credit standing of purchasers.

While our facilities for investigation of credit conditions in the Argentine have been greatly improved in recent years, and such information can now be obtained through the regular credit agencies and our banks which function in Latin America, still there is an ever changing condition in the trade, and local contact with the trade is almost a necessity to eliminate losses on bad accounts.

To recapitulate therefore: In entering the Argentine trade as a new comer, let your preliminary investigations be careful and exhaustive; be sure that there is a market for your particular product and that you can successfully compete with the European and other large American concerns; secure the assistance of one of these American concerns to act for you if possible, otherwise try to make arrangements with some European representative who handles a non-competitive line; if you send your own man make sure that he is familiar not only with your product, but the language and Latin buying customs, and provide him with ample funds; and lastly do not expect to receive orders of any importance during the first year or two.

In an article to follow, I will give you particulars regarding the paper trade in one of the other countries that lie to the South of us. There are 75,000,000 people in Latin America, and their purchasing power is increasing annually.

Control in the Specialty Mill

A Discussion of Principles Involved in the Technical Control of Papers Made to Customer's Specifications.

By A. E. H. FAIR, B. A. Sc.
Superintendent, Alliance Paper Mills, Ltd., Merriton, Ontario

IN reviewing the outstanding developments in the paper industry during recent years, one of the most important is the slow but sure trend towards technical control of the process. That this control is definitely established is a safe assumption because the more aggressive concerns have realized the importance of knowing more about the nature of each step and of recording the details of each operation. They have found that control pays dividends in improved quality and production, that it has also assisted in reducing the number of rejections to a minimum.

For many years papermaking has been classified with the so called "arts" while allied industries have been considered among the sciences. That papermaking will ever be a true science is questionable. The raw materials used in its manufacture are so variable in their physical characteristics and it is so difficult to detect these differences that the papermaker must constantly be on the alert to alter his treatment and furnish to secure constant results. In the specialty mill there are many variations of treatment and furnish. This means closer supervision than is necessary in the mill where fewer grades are made. It also means numerous changes in the methods of maintaining anything like constant quality.

For many centuries paper has been made from various raw materials and fairly constant results have been obtained. The process has been controlled solely by the judgment of the expert papermaker. Even the invention of the fourdrinier machine, which brought with it vastly increased production of all grades and consequent increase in consumption of printing paper, was not accomplished by any material change in the control of the process.

In very recent years, however, the inception of the high speed news presses and fast news machines have necessitated closer control of newsprint manufacture, so as to assure safe running conditions together with the maintenance of good printing qualities in the sheet. At the same time the newsprint mills have made some changes in their methods, which have facilitated control of the process. They have been able to eliminate the beating engine and substitute for it a combined grinder and jordan treatment which gives equally satisfactory results. This process can be controlled effectively by constantly checking the freeness of the stock as it goes to the paper machines. Newsprint manufacturers have learned that some type of control is essential to present day conditions and nearly all of them have adopted some method more or less elaborate. Those who have the most thorough methods are best able to maintain consistency or production and quality. Control of these latter factors means materially lower costs.

Variations Controlled Through System of Records

As the sheet of newsprint must possess good strength and printing qualities, so must the specialty grades have certain characteristics. These characteristics are at least equally as important as those of a good sheet of news. The papermaker has been able in the past to get sufficiently constant results most of the time without the help of instruments or control methods. There has not, however, been a measure of what he has done to get these results, nor has the result itself been expressed in figures to which he or his associates might refer. A certain grade was accepted as satisfactory for a definite purpose. Exactly how much deviation from the average quality could be tolerated was not definitely known. A sheet was either good or bad, sufficiently strong or too weak for the purpose for which it was made. There is and always will be some variation in the quality of paper made under supposedly identical conditions and from similar furnishes no matter what care is taken by the papermaker. The toleration, however, varies according to the requirements of the consumer. Only a true understanding of these and their expression in intelligible figures will form the basis of a method to maintain the required standards.

The advent of automatic converting machines has made the manufacture of some specialty papers far more exacting and has brought about the creation of numerous new grades. In many cases the normal strength of the sheet is just sufficient for safe operation of the converting machine. In addition, slight variations in bulk, density, finish or other properties may render the paper useless. If the paper has been rewound into small rolls or treated in some manner and then is found to be unsuitable, its recovery at a price above scrap value is very improbable. For the above reasons, many specialty mills have realized the necessity of studying the problems

of the converter and have developed control methods to assure the maintenance of satisfactory standards.

It is unnecessary to go into the details of how increased production and reduced rejections can be affected by technical control. All mills enjoying its benefits realize what it yields in dividends and know how much it assists in maintaining the goodwill of the customer. It is, however, important that the essentials of successful control be understood and practised. Many mills have elaborate control methods but their effectiveness is questionable. Other mills have a less elaborate but truly effective system.

Studying the Customer's Problem

As stated above, before attempting to control the product of the mill, it is essential that the exact characteristics which are required be determined. These can only be learned by studying the customer's problem. The use to which the paper is put should therefore be ascertained and if possible a mill representative should see the paper being used. He should also observe the conditions in the converter's or printer's plant. This latter point may have a direct bearing upon his success. Once the requirements of the customer have been learned, it is necessary to convert these into specific factors. In developing standard practise from this information, technical methods are invaluable. Intelligent use of the data gained in preliminary runs will facilitate accurate duplication of results and so insure against rejections. At the same time standards will be automatically established.

It is, of course, necessary that the proper tests be made and that sufficient stress be laid on the most important of these. It is also essential that instruments, which give useful data, be employed in each case. This applies to actual control of the process as well as to the tests on the finished sheet.

Control in the beater room may be facilitated by one or more of many intruments. The recording wattmeter, the lighter bar motion recorder and the freeness tester are all effective if used in the proper manner. The first two mentioned have been gaining favor recently. Jordaning control has been developed with help of consistency regulators and recording wattmeters. Without doubt these two instruments are very effective.

Most important of the various steps in control are the tests made on the finished sheet of paper. Numerous tests may be made but in the majority of cases only two or three are of real importance. Care and accuracy should be practiced in making these tests and in recording the results. Equally as essential, however, is the understanding of their relative importance and the knowledge of how to correct for variation from the required standard. It is the intelligent interpretation and use of these results which constitute control of the product. Elaborate data and curves are of little value if the mill operator is unable to use the information to keep his paper up to the standard. The making and recording of tests make up only a small part of successful control. Upon the ability of the papermaker to corelate these results with operations depends the effectiveness of control methods. Readings of various instruments and tests made by the mill chemists show us only whether we are right or wrong. They do not of themselves alter the quality of the paper, nor will they correct mechanical wrongs in the mill. An understanding of practical operations makes possible the use of information given by instruments and technical tests. Control methods are not designed to oust the practical papermaker, but rather to serve as an assistance to him, and if he accepts them as such he will find that his duties are less arduous and his efforts more effective.

Permanence and Papermaking

No. 5

By DR. TH. BENTZEN, Chief Chemist
Whiting-Plover Paper Co., Stevens Point, Wis.

CHEMICAL pulp as paper material. The designation "Chemical pulp" signifies in contradistinction to mechanical pulp or groundwood the different kinds of wood fibers and straw fibers which have been prepared through chemical processes to be serviceable as paper material. However, only one of these chemical pulps is to be taken into consideration in the making of fine paper, at least as far as writing paper is concerned, and this is the so-called sulphite pulp, made from conifers.

The constantly increasing consumption of fine paper has, of course, caused a severe scarcity of rags, new as well as old (the latter especially, since in some countries west of the sun and east of the moon, for instance, ladies' inexpressibles have been reduced to a single buttonhole made of silk, at the same time as all other kinds of their underwear have been swept into the havebeens). It was, therefore, imperative to find some other cellulosic material to serve as a substitute, or at least as an addition to the cotton and linen cellulose. The American chemist, B. C. Tilghman, was the first to try to solve the problem, and he was in 1866 granted English patents for his invention of producing sulphite pulp. During 1870 to 1900, his efforts were followed and continued by the Swedish chemist, C. V. Ekman, and the German, A. Mitcherlich, and since then the quality has continually been improved and the consumption increased, so that at the present time, the United States alone is producing nearly 2,000,000 tons yearly, including a big part of the best sulphite pulp ever make.

But in spite of all skillful efforts, the quality of chemical pulp, the sulphite pulp, is still inferior to cotton and linen cellulose, due to its lack of strength and permanence. Although, as a rule, only

ocular demonstrations should be made use of to confirm the indisputableness of what is claimed to be a fact, nevertheless, quotations presented by generally recognized experts and reprinted as Government reports must be regarded as authentic, as they in effect are reliable, reported results of ocular demonstrations. I, therefore, have no hesitation to bring to your knowledge the following extracts from the official report of the well-known and generally recognized experts, S. Kohler and Gosta Hall, published by the Swedish Government Testing Institute in Stockholm as report No. 28 in the year 1925. In this report the two special cellulose chemists have stated as follows:

Page 66—"Through the addition of sulphite cellulose to rag in the manufacture of paper, the permanence evidently decreases in proportion to the quantity of the sulphite cellulose added. It must, therefore, be regarded as unwise to add sulphite cellulose to paper of importance, which shall be kept for all times."

Page 84—"It must be considered proven that paper made from bleached sulphite cellulose possesses less durability over a long period of time."

According to this, it is proved with a certainty beyond all doubt:

(1) That rag as paper material is the fundamental condition for absolute permanence.

(2) That this quality of permanence is decreasing in proportion to the quantity of the chemical pulp added.

(3) That, therefore, where paper of highest grade of permanence is wanted, only rag and nothing else than rag should be used as papermaking material.

But, at the same time, we dare not overlook what in the above mentioned report is quoted upon page 67:

"In the case where **comparatively** good permanence is demanded of paper for less important documents, mixing of rag and sulphite cellulose may be considered to be satisfactory."

This is analogical to what I said in Chapter 2 of this series, published on page 282 of the May, 1930 issue of THE PAPER INDUSTRY "that sulphite pulp to a certain extent may be used where the papermaker is forced to offer some of the qualities of strength and permanence to meet the demand of a cheaper grade of nevertheless fine paper." It is with respect to "real" and "apparent" values, something like solid gold and filled gold, sterling silver and silver plate or silk and rayon—all of the substitutes with "limited guaranty."

But even then, as a limited substitute, we shall not forget, that in the range of sulphite pulp we have to deal with very big deviations in strength and vitality, and as they cannot be classified into certain grades, we have to determine these qualities, testing average samples of the different shipments, even of different bales of the same shipment.

Two different testing methods are at our disposal, the forming of sheets from pulp prepared through a ball mill or laboratory beater and the Mercerization test. By the first of these two methods, the forming of sheets is so commonly known that it seems unnecessary here to describe it. It give us not only the figure of folding endurance, Mullen test, etc., but also the proper beating time, whereas the Mercerization test gives us the percentage of the fiber contents of the cellulose, the "alpha cellulose."

It is proved through experiments that there is a certain connection between the amount of alpha cellulose and the strength, that the higher the percentage of alpha cellulose, the higher folding endurance, as for instance, the following comparative tests of sulphite pulp will prove:

Lot A with 87.3 per cent alpha cellulose—2274 folds
Lot B with 86.8 per cent alpha cellulose—1920 folds
Lot C with 85.8 per cent alpha cellulose— 990 folds
Lot D with 60.4 per cent alpha cellulose— 989 folds

But a you see, the decreasing of folding endurance is not exactly proportional to the decreasing contents of alpha cellulose, and this proves that one sulphite pulp may have proportionally better chemical qualities (higher contents of alpha cellulose), another proportionally better physical qualities (folding endurance). Therefore, where time and equipment permits it, both testing methods should be made use of, and as a rule you will find that high folding endurance at proportional low alpha content will prove to possess less vitality than will the opposite conditions. This means that a sulphite pulp with a low alpha content will break down sooner than a pulp which contains a higher percentage of alpha cellulose.

About the alpha cellulose and its chemical and physical conditions, the next chapter of this series will inform us, but before I conclude the present one, I want to direct your attention to Carl Hofmann's well-known Handbook, 2nd edition, Volume 2, page 1071, where as Figs. 1015 and 1016, two reprints are demonstrating:

(1) Rag fibers from about 500-year old paper, still in excellent (probably unchanged) condition, and

(2) Fibers from writing paper made of Waldhof sulphite pulp in one of the best German paper mills, only about 5 years old, but during that short time already partly (mostly) lignified (became wood again).

This does not, of course, prove that all sulphite pulp will lignify after a few years, but it proves that while paper made from rag is possessing the main condition for permanence, such made from sulphite pulp only can be designated as of more or less vitality. And such made from mixtures of rag and chemical pulp?—Well! A mulatto is neither white nor negro, but he may nevertheless be very serviceable if you place him where he belongs.

Steam Power in Paper Mills

Comparative Over-All Efficiency in Power Generation

By J. F. FERGUSON
Ferguson Engineers, Chicago

IN the paper mill where steam is used in the process of manufacture, heating of buildings, etc., power generation within the works, very often becomes a much more interesting subject than the generation of power in a steam power plant of public utility. The particular reason for this is due to the higher efficiencies in power generation available and demanded, or at least should be demanded by the paper mill, together with the many different phases of engineering that should accompany such an industrial power development.

In the public service plant even of extreme sizes, the engineer believes he has accomplished a remarkable feat if the over-all system efficiency in generation of steam power is around 25 per cent, not including the losses in transmission and distribution which may reduce this by anywhere between 10 and 30 per cent. In a paper mill we should expect an over-all system efficiency in steam power generation of from 50 to 73 per cent, depending upon the size of mill and class of paper production. The efficiency referred to here is:—

$$\frac{\text{Heat equivalent of power delivered}}{\text{Heat equivalent in fuel chargeable to power}}$$

In a paper mill power development, most engineers are too much inclined to follow the practice of central stations, with the result that the completed plant approaches the central station of public utilities in appearance and over-all efficiencies. In many cases, very much higher efficiencies in operations and lower cost of development could be attained by a more modern industrial design of the higher class of steam power development.

Condenser Losses

Many engineers and plant operators are inclined to judge the over-all efficiency in power generation by the amount of excess steam escaping to the atmosphere. This truly indicates a heat loss and a corresponding coal loss and is visible to the eye of the operator, manager, or passer-by, but it is no true comparison of actual over-all efficiency in power generation. Another plant may not have any exhaust steam going to the atmosphere, but with a condensing unit or part condensing unit of some type of prime mover, is losing an equal or many times greater amount of heat down the river with the circulating condenser water. This of course can not be seen by the operator or his manager and the loss continues unnoticed by them. "—, You can fool some of the people all of the time,—." (Lincoln). As far as over-all plant efficiency is concerned, it makes little difference whether the B.t.u.'s or kg.-cal.'s escape by the front door observed (to the atmosphere) or sneak out the back door unobserved (to the river), they are lost forever to the paper mill in both cases.

It seems to be a common opinion among engineers that so long as there is no steam going to the atmosphere he has a well balanced steam and power system. When he makes this remark and has any prime movers operating condensing by which heat escapes to the river his plant is really unbalanced and very much so, for no mill operating condensing and losing heat to the river can be a balanced system.

A balanced heat and power system is one in which all the power is obtained from the steam used in process heating, heating of buildings and heating of feed water and where all the exhaust steam from the prime movers is condensed by the manufacturing and heating systems.

High Steam Pressures

Recently we have witnessed a gradual increase in steam pressures for paper mills, although the writer cannot see why this advance should have been so long delayed, for these higher pressures for the industrial plant have been anticipated for many years. Steam pressures of 350 lbs. per sq. in. were used in moderate sized marine engines about 20 years ago, automobiles were using a steam pressure of 550 lbs. well over 25 years ago, a steam turbine operated at 1,700 lbs. pressure at Stockholm Exposition in 1897, and other experiments and developments of small sizes ranging from 500 to 3,000 lbs. pressure were carried out as far back as 1830. It may be said that high and extreme pressures are no new idea. The manufacturing public has been extremely slow to adopt these higher pressures for commercial work. In general, one manufacturer waits for the other to try it out first, and consequently a new idea may have to wait for years or perhaps centuries before sufficient interest or capital can be gathered to undertake the actual development. When the author first advocated steam pressures of 500 to 2,000 lbs. for commercial development many years ahead of any such undertaking, a very few engineers accepted the idea as an advanced stage to which we were gradually approaching, many looked upon it as so far ahead that it was worthless to give it any further consideration, while others (the majority) considered the idea as most ridiculous.

Higher pressures have been advanced with the object of obtaining greater efficiencies in the generation of power from the steam and most particularly from the steam required in the processes of manufacture. The gain in power output in per cent is small with the condensing plant compared with the gain from back pressure units exhausting into a manufacturing system. For example, let us consider increasing the steam pressure from 200 lbs. to 400 lbs. absolute; for the condensing unit we will assume a fair vacuum of 28.5 in. and for the back pressure unit a back pressure of 25 lbs. absolute or 10.3 lbs. gauge. The power available from the condensing unit will be increased about 10 per cent and the power available from the back pressure unit about 30 per cent. The higher the back pressure the greater the gain in per cent in power output with increased initial steam pressures.

Prime Movers

The selection of a prime mover or type of prime mover is dependent upon many existing and possible future conditions in plant layout, load, and operating conditions, and the reason for selecting a type of prime mover for a given plant at one time may be no reason for selecting the same type of unit for a similar plant or perhaps even the same plant if the selection were made at some other time. Very often in power plant extension, it is necessary to make provisions for additional load conditions by the installation of prime movers to meet the present space, steam and load conditions, which in themselves would not be considered at all if a new complete plant were under consideration. Under these and similar conditions, the selection of a prime mover is very limited and the question of efficiency may enter very little into the decision.

In steam units for driving paper machines, very little respect to steam rates of prime movers has been shown and it will be noticed that the practice in this respect has often been from bad to worse and then to still worse.

Many are inclined to believe that the efficiency in steam consumption of a steam unit driving the paper machine, is of little account so long as the steam is all used in the paper machine dryer. The efficiency of this unit is equally important as the main prime movers, or any steam unit about the entire plant, if real over-all efficiency is expected.

When considering units of around 1,000 to 2,000 kilowatt capacity, as generally found in paper mill plants, a kilowatt-hour may be obtained at a fuel equivalent of around 20,000 B.t.u., while with the back pressure unit exhausting to the manufacturing system, a net fuel equivalent per kw.h. may be less than 5,000 B.t.u. This would indicate that efficiency in some respects is much more important in back pressure units than in the condensing units; for every kilowatt-hour produced by back pressure units would mean approximately a reduction of about 15,000 B.t.u. In the case of a plant comprising both back pressure and condensing units or a combination unit or units, it is very important that the back pressure units or back pressure section contribute to the maximum economical extent to the power output, particularly where a fair portion of the load can be carried or produced thus.

In paper mills where back pressure operations prevail, the steam engine is much more efficient in the generation of power than steam turbines. The higher the working back pressure, or the higher the initial steam pressure, the greater the advantage of the engine unit in this respect over the turbine unit. The engine unit is decidedly a high pressure prime mover and the turbine just as decidedly a low pressure prime mover, each type possessing characteristics or features to classify it to its respective field. In the engine unit, the stage efficiencies in expansion increase as the stage steam pressure is increased up to the critical pressure of 3,200 lbs. per sq. in. In the turbine, the highest stage efficiency is at a very low stage pressure, much below atmosphere, and from this point falls off as the pressure is increased, so that in small moderate sized units the stage efficiency near 3,000 lb. pressure is around half of that of the engine unit. We refer to the higher class of unit in each case.

With the advent of higher steam pressures will come a movement back to the reciprocating steam engine in the industrial field (including paper mills), in fact this movement seems to be already under way.

Plant Costs

In paper mills where the power demand is high in proportion to the steam demand such as in mills manufacturing the higher class of book paper, writing, felt paper, tissue and news print (including groundwood, higher efficiencies in power generation will generally reduce the initial investment in power plant, to say nothing of the lower fuel and operating costs. High pressure boilers will cost more than nominal pressure units, but in the above class of mills higher steam pressure will reduce the steam demand chargeable to power, so that smaller boiler units and smaller boiler plant throughout will produce equal power capacity. Likewise, more efficient power units will demand lower steam pressures or smaller boiler units and lower boiler plant costs.

The more efficient prime mover will generally cost more than the less efficient unit, but where efficiency of the unit is important as in the above class of mills, the over-all plant costs will generally be lower with the more efficient prime mover units.

There is no hokus-pokus, nor Aladdin's lamp to the development of new fields. Concentrated thought will do it.—J. Kindelberger.

Cost Accounting in the Paper Industry

Part XVII—Problems of Multiproduct Mills

By D. A. WILCOX

Queries and Answers

In order to encourage discussion on the subject of cost accounting in the paper industry, the author of this series of articles is prepared to answer to the best of his ability any queries on cost accounting that may be directed to him.

THE principal difference between a single product mill and a mill making a variety of products lies in the segregation of direct charges, materials and overhead, to the individual products, and to the proper allocation of general expenses. In a single product mill no such problem comes up, since all of the materials eventually find their way into one product—or are lost, and all of the expense is attached to the one purpose of producing this product. In view of this, it is not necessary to go to any great trouble in the prorating of general expenses: they can be applied as a fixed rate per ton to the product. When, however, a multitude of products are made, and especially when they do not all follow along the same line of manufacture, troubles accumulate. We put materials constituting the furnish into a beater and it is difficult, if not altogether impossible, to follow them through and ascertain just where they end up.

Difficult to Trace Materials

A paper mill is very largely a matter of hydraulics—water is used throughout as a medium of transportation, the materials being suspended in it until the paper is finally dried and taken off the reel. In the process, we reuse as much of the water as possible in the form of white water, and this in turn carries with it part of the materials originally put into the beaters and so transfers values from one grade to another. Broke is another problem, and while broke may be confined closely to the manufacture of a special grade of paper, there is undoubtedly also a value change here. Thus it is difficult to ascertain definitely the exact disposition of our raw materials and at the same time determine the make-up of individual grades.

In regard to conversion, this is to some extent a mechanical problem; i.e., a problem of the mechanics of accounting, because it involves timing the operations to see just when one order or grade was started, as well as when it was stopped and another put on. To determine elapsed time is always a bother. If it is left to the operators to record, inaccuracies ensue; men forget to notice when changes were made, or are too busy to note them, with the result that elapsed time becomes more of a guess than fact. The use of mechanical equipment is costly and also depends upon the human element for its operation. It would seem that the only really accurate method is to have a clerk or timekeeper note the times independently of the operator, and this might prove too costly to be practical, except for experimental purposes.

General Overhead

Even assuming that we can determine the exact ingredients of a lot and that we do know the elapsed time of each operation, we are still confronted with the difficulty that of all the total charges which go to make up the element of conversion, only a relatively few can be said to apply directly to a particular product; for there are a lot of expenses which are general in nature and must be prorated in some manner.

Costs by Grades Important

Now what is the significance and importance of all this?

First we do want to determine as far as practicable the relative costs as between grades. We should like to concentrate on the more profitable ones and drop off those that are unprofitable. Of course, this cannot be done all at once and we are glad to get what we can to fill the mill, but having been convinced that certain grades are profitable and certain others unprofitable it is only natural that there will be a constant effort to concentrate on the former and get away from the latter. This is a reason for desiring to compute relative costs.

A second important reason for wishing to determine costs by grades is to maintain uniformity in bidding throughout the industry, and for this reason we not only wish to know our costs, but we wish that all other members of the industry would determine theirs in a similar manner, so that it shall not appear that what is one man's expensive grade is another's cheap grade—only because of the method of accounting and not because of any actual difference in the process or expenses themselves.

It is very possible for this to happen. In every multiproduct mill there are a large number of expense items, such as general superintendence, mill office, yard expense and the like, which cannot be apportioned directly to any one product or manufacturing department. The question of policy arises as to how these charges should be distributed. There is no definite method of procedure. It is largely a a matter of judgment wherein the opinion of any man who has conscientiously studied the problem is as good as that of any other man who has made a

similar study. A more detailed analysis might aid in reducing the number of these general charges and prove that they are, in fact, not general, but specific. However, that is as far as such an analysis can go—having done its utmost in this regard there inevitably remains a residue which is still of a general nature.

Uniform Cost Methods Necessary

What then can we do? The most sensible thing would be for all representatives of the industry to get together and settle upon some uniform method of procedure so that costs would be uniform as regards practice; it would be of benefit to the mills to do this. What the big mills need more than anything else is protection from the ignorance of competitors who do not know their own costs, or who, if they do know them, build them up in some different manner with the result that they quote a price on a grade that seems fair to them but which will seriously impair the profits of their competitors. This is especially the case in a period of overproduction, in a buyer's market where it does not take a very large order at a low price to affect the prices of all lots in that grade. The big mills have too much at stake to risk this danger. Uniformity in cost methods, while not a cure-all, might accomplish much in preventing unnecessary and disastrous cuts in prices, and thus in profits, by concerns who imagine the lower price profitable to them because their cost figuring makes it appear so.

Functional Costs

Cost in a multiproduct mill, just as in a single product mill must be considered from two angles, the resulting costs of the individual products and the functional costs of the manufacturing process. By "functional costs" we mean the cost of performing certain functions of the operations. Functional costs are concerned with such items as steam costs, labor costs, supplies, uses of materials, waste, etc., considered from the standpoint of the operation itself rather than in relation to any particular grade or order. It is in the use of functional costs that control of expenses is obtained and if expenses and losses are kept as low as possible, with efficiency high, the resulting grade costs will necessarily be low.

It is most desirable to reduce clerical work to a minimum and therefore any system which gives both functional costs and individual grade costs simultaneously is superior to one in which, after securing the functional costs (which must come first in order of importance), the cards must be rearranged in order to get the grade costs. It not only reduces work but the costs of the grades are obtained more promptly.

Again we must consider the question of loss of productiveness, or, as it was termed in our sulphite mill, unearned burden. The orders should be charged only with a fair amount of conversion for the operating period of the department, time down being charged direct to profit and loss as a cost of lost time. We must take care that the orders are charged only with such items as relate properly to productive activities, while costs arising from other factors are charged to such factors. Only by this means can we analyze accurately the facts and get a fair cost figure for the individual grades.

Actual Versus Standard Costs

This brings up the question of "actual" as contrasted with "standard" costs. It is true that time down can be divided roughly in an actual cost system and the cost while operating charged to orders and while down to profit and loss, but it would be difficult to do this other than approximately.

Let us first consider the costs from the angle of getting grade costs and then from that of getting functional costs. In any "actual" cost system, it is necessary to go through two steps to get them; in a standard cost system, both grade costs and functional costs are determined at the same time.

Four Methods of Determining Individual Costs

There are four major arrangements by which individual grade costs may be obtained; they are:

(a) In "actual" costs, through a system of estimates based on tests and observations but not "tied in" with the books, being only checked against them by a general sort of reconciliation.

(b) In an "actual" cost system, where the total costs of operations for the month are procured and then prorated over the various grades, either on some arbitrary basis or on a basis of time, use of materials, total direct expenses, or some other method.

(c) In a standard cost system, when conversion is based on the actual time (or other unit) used by each order or grade. The charge per unit of time is at a standard predetermined rate but the total amount is based on actual operations. This is known as the "job order cost system."

(d) In a standard cost system, where costs are based entirely on standards. No actual operations on individual grades are noted and the individual grade costs are tied in with the general books through a series of variance accounts.

Estimated Costs

Strange to relate, (a) and (d) are very similar in their general conceptions, but they are as far apart as the poles in their methods and results; both are based on estimates of what the costs should be and these costs are taken to represent the cost of its

particular grade, but there all resemblance ceases. In the "actual" cost system the entire structure ends, as soon as costs are obtained; there is no "tie-in" with the general books, though an effort is usually made to reconcile the total profits as shown by the grade costs and the profits shown on the general books. Total cost of sales is built up on the general books without reference to the cost by grades; in fact the latter are statistical data entirely and have no place whatever in the books.

Standard Costs

In the fourth system, costs are also wholly estimated, but here they are an integral part of the books and the total cost of sales is based primarily upon them. Every expense is accounted for and apportioned, either to production or to some variance account. The standards are, to a great extent, self-correcting, because persistent variances in the same direction give rise immediately to suspicion and unless satisfactorily explained in some other way, usually bring about changes in the standards themselves.

As customary, we shall proceed to describe in some detail each of the systems so that our readers may have full information and be able to decide for themselves which system may be best adapted for their particular business.

Actual System—Estimated Cost of Grades

So far as the mill and functional costs are concerned, little or no system may be used. The mill need not be departmentalized at all; in one particular mill which the author has in mind, there was no system in evidence which gave functional costs. In this particular mill the manager was a very brilliant man who lived right at the mill and had the whole thing under his hat. Through personal observation and constant contact with conditions, he felt that there was no need of any elaborate system to inform him of what was going on. The cost department was confined almost entirely to one girl who did the mechanical and clerical work incident to figuring the estimates and keeping track of the costs of, and estimated profits on, shipments, based on these estimates. There was, of course, in addition, a clerical office force to keep the books, make up payrolls and the like.

An Actual Cost System

All expenses were charged to operations as expenses were incurred, that is, supplies were charged to operations as received, inventories as used, labor as incurred and so forth. There was no general storeroom and many of the individual superintendents and foremen dealt directly with the salesmen representing mill supply houses and machinery manufacturers. Some foremen did, indeed, maintain for their own satisfaction detailed cost records, and a survey showed a considerable amount of cost work being done all over the mill, but not in the office. Such work in general covered only such direct expenses (mostly labor) as seemed important to the foremen and was used chiefly for their own information and to answer questions of "The Old Man."

It was the loosest possible sort of a system with little or no office check or control. It was believed to be very cheap, but whether or not this was the case is doubtful in view of the amount of cost work actually done by the foremen. In fact these foremen not infrequently detailed some girl or man (kept on the pay-roll under some other designation such as "counter") to do much of the clerical work for them and it is questionable whether scattered cost work of this sort is really as economical as when the work is entirely concentrated in the office, with the use of modern equipment and methods.

No record was kept of broke losses. Paper off the machine was weighed and then immediately marked down by a standard proportion of shrinkage so that machine productions were reported on the basis of the finished paper which the rough paper was supposed to yield.

Accounting for Expenses

On the general books, inventories were debited with invoice costs of raw materials, freight, demurrage, etc. Labor was charged to a labor accrued account, supplies to a total supply account, and so on. At the end of each period (the mill ran on a four-week period basis) consumption of raw materials the total labor, supplies and other actual expenses were debited to paper in process. A detailed inventory was taken of the paper actually in process at various points, and the finished stock priced at estimated costs based on how far each lot had progressed; this inventory was then credited to paper in process and the difference charged to cost of sales.

The whole plan was a simple one and readers can judge how useful it must have been to the management. It is not one that I would endorse, but the gentleman in charge, who by the way was thoroughly familiar with standard costs and other methods, was ardent in his advocacy of it. Probably his great familiarity with the mill and his remarkable ability as a manager enabled him to operate the plant successfully on such a basis, and he was unquestionably successful. Perhaps the times were kind to him and general business of such a nature that he "got away with it." Be that as it may, here was a mill with no cost system worthy of the name that still made good money over a period of years.

In our next instalment we shall describe how the cost of grades was estimated in this mill and proceed with an exposition of our other systems.

There's something good, even noble, about any one who does his job well.—St. Croix Observer.

Lessons in Steam Plant Practice

Lesson III—Different Types of Boilers

By J. CHARLES RYDER
Champion Fibre Company, Canton, N. C.

These lessons in Steam Plant Practice are being published in THE PAPER INDUSTRY by arrangement with the Champion Fibre Company, Canton, N. C. They are a part of the general educational course conducted by this company under the direction of J. Norman Spawn, educational director.

AFTER the Cornish boiler, came the Lancashire (Fig. 7) which had two flues. It displaced more water and gave greater heating surface. Flue boiler builders saw that it was advantageous to increase the number of tubes and make them smaller, until the modern return tubular boiler was developed. Incidentally men tried to improve the circulation of the water within the boiler. **Water circulates always from the cooler to the hotter regions.**

The Galloway boiler (Fig. 8) was designed about 1860 in England, to increase the circulation of the boiler water. It was a single flue but within the flue

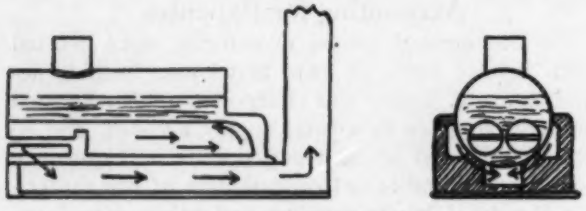


Fig. 7—Lancashire Boiler

were conical tubes, extending vertically from the bottom to the top. They were about 5 inches at the bottom to 10 inches at the top. These tubes increased the heating surface and circulation making it a fairly efficient boiler. This boiler was internally fired. The flue extended from the bridge wall to the rear. The gases returned along the sides of the boiler from the rear to the front, then down under the shell of the boiler to the rear where it passed out to the stack.

The return tubular boiler (Fig. 9) which is familiar to us all requires no description, but the settings in most of them are faulty, in that the boiler is set too low over the fuel bed for good combustion. The flame from the fuel strikes the relatively cool boiler shell producing soot and smoke. The boiler should be set high enough to be out of reach of the long flame of high volatile coals. Soot is one of the best non-conductors of heat. In most of our return tubular boilers, the space behind the bridge wall is usually filled in sloping back to the rear wall. This is wrong, the floor behind the bridge wall should start at the bottom of the wall and run straight back, because this combustion chamber acts as an expansion chamber. It also delays the passage of the gases, insuring better absorption of heat through the boiler shell which means lower stack temperatures, eliminating as much as possible, that waste of heat. It acts as a trap to catch fine ash carried over by the furnace gases, thereby preventing the depositing of it in the boiler tubes. It also acts as a combustion chamber, in which the process of combustion, if unfinished in the furnace proper, may be completed. The process of combustion should take place in the furnace proper and the furnace should be so designed, and of ample size to do this. Coke or anthracite fuels have a relatively short flame and the grate may be closer to the boiler than when using bituminous coal, because bituminous gives a relatively long flame while the volatiles are being driven off.

The higher the setting is above the grates, the greater the radiation losses are through the furnace front and walls, but this loss is more than offset by the better combustion conditions existing in the furnace.

It always pays to cover the boiler setting with a good insulation material and especially the cracks that develop where the brick work joins iron, such as at door frames, I-beams, braces, and stays, also at the rear arch where a great amount of excess air can get in, diluting the gases just before they enter the flues. This arch should be inspected frequently and closely. Excess air is the greatest detriment to the efficient operation of any boiler, and it does not

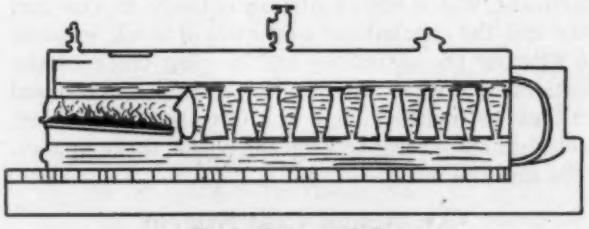


Fig. 8—Galloway Boiler

matter from what part of the setting it leaks in, some sort of plastic material should be applied to stop the inleakage.

We frequently hear complaints about the draft. The lack of draft is a good alibi for leaky settings; sometimes when we inspect the boiler settings we find holes big enough to "throw a dog through." If these were repaired there would be ample draft.

Water Tube Boilers

Owing to the number and variety of problems involved, to the mechanical difficulties in its construction and to the high class of workmanship required, water tube boilers made slow progress in development. According to Babcox & Wilcox, "Steam," the first water tube boiler in which the water was circulated inside the tubes was built by John Blakeley and was patented by him in 1766. The first successful use of water tube boilers, however, was by James Rumsey, an American inventor, celebrated for his early experiments in steam navigation, and it is he who may be truly classed as the originator of the water tube boiler. John Stevens, American, built a "porcupine" boiler (Fig. 10) in 1804 but this type of boiler never was a success. It consisted of a combination of small tubes connected at one end to a reservoir. Another form built in 1805 by John Cox Stevens, a son of John Stevens, consisted of 20 vertical tubes arranged in a circle about 12 inches in diameter connecting a water chamber at the bottom and a steam chamber at the top. One of these boilers is now in the Smithsonian Institute in Washington. In 1856, Stephen Wilcox was the first to use the (inclined) water tubes connecting water spaces at the front and rear with a steam space above.

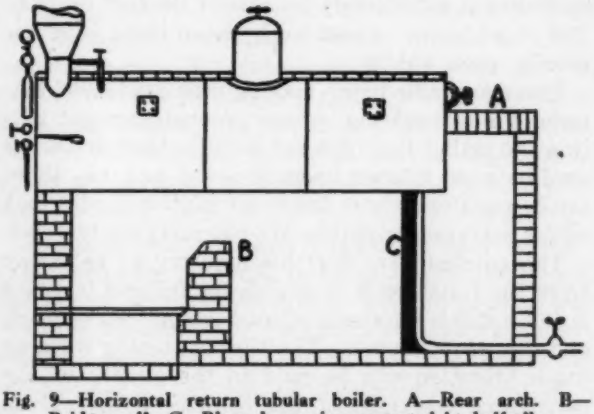


Fig. 9—Horizontal return tubular boiler. A—Rear arch. B—Bridge wall. C—Blow down pipe protected by half tile

Requirements of a Perfect Water Tube Boiler

1—Proper workmanship and simple construction, using materials which experience has proven to be the best, thus avoiding the necessity of early repairs.

2—A mud drum to receive the impurities deposited from the water, and so placed as to be removed from the action of the fire.

3—A steam and water capacity sufficient to prevent any fluctuation in steam pressure or water level.

4—A water surface for the disengagement of the steam from the water of sufficient extent to prevent foaming.

5—A constant and thorough circulation of water throughout the boiler, so as to maintain all parts at an equal temperature.

6—The water space divided into sections so arranged that, should any section fail, no general explosion can occur and the destructive effects would be confined to the escape of the contents. Large and free passages between the different sections to equalize the water line and pressure in all.

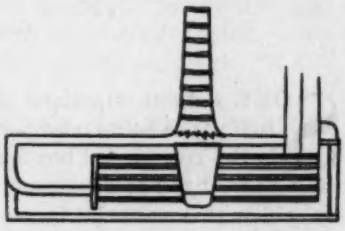


Fig. 10—Stephens Porcupine Boiler

7—A great excess of strength over any legitimate strain, the boiler being so constructed as to be free from strains to unequal expansion, and if possible, to avoid joints exposed to the direct action of the fire.

8—A combustion chamber so arranged that the combustion gases started in the furnace may be completed before the gases escape to the chimney.

9—The heating surfaces as nearly as possible at right angles to the current of heated gases, so as to break up the currents and extract the entire available heat from the gases.

10—All parts readily accessible for cleaning and repairs. This is a point of the greatest importance as regards safety and economy.

11—Proportional for the work to be done, and capable of working to its full rated capacity with the highest economy.

12—Equipped with the best gauges, safety valves and other fixtures.

Steam Plant Practice Questions

(1) What was the name of the boiler following the Cornish?

(2) In what direction does the water in a boiler circulate?

(3) Why were the conical tubes put in the flue of the Galloway boiler?

(4) Why is a low set boiler inefficient when using bituminous coal?

(5) Would you slope the space behind the bridge wall or make it straight from bridge wall to rear wall of a return tubular boiler?

(6) Where should the process of combustion take place?

(7) What is the greatest detriment to efficient boiler operation?

(8) Name some of the places where you would look for air leaks in the setting?

(9) (a) Who first patented the water tube boiler? (b) In what year?

(10) (a) Who first used inclined water tube boilers? (b) In what year?

Need for Standards of Performance of .009 Corrugating Paper

By WILSON GALLOWAY
General Manager and Treasurer, The Hagar Straw Board and Paper Company

SOME definite standard of performance of the .009 paper being used for corrugating purposes in the corrugated box industry needs to be established. At the present time, the only specifications by which this material is governed are the caliper .009, moisture 7 per cent to 10 per cent, weight 34 lb. per thousand square feet. Having been made to these specifications by the paper manufacturers, this .009 paper for corrugating is delivered to the box maker, but no one has a definite measuring rule by which he can tell whether it is up to standard, or if it will meet the requirements in the manufacture of boxes. Such a condition should not exist and can be eliminated for the good of all concerned. There are a number of interested parties who logically should co-operate in the establishing of the proper standards for this class of paper, and by getting together they should be able to police the industry with benefit to themselves and with real economy to the general public.

There is no measurement to tell how hard the corrugating sheet should be; when it is too hard; nor when it is not hard enough. No two corrugators have the same ideas of stiffness, and practically no one can tell by any reasonably certain test which of a dozen sheets shown as samples will be most satisfactory or even as satisfactory as one then on the corrugating machine.

Few box makers in the corrugated business have any definite reliable tests by which they tell whether the .009 sheet being corrugated is up to a definite standard, or above it, or below it. In the majority of corrugating rooms, the operator of the machine feels the sheet as it passes through the rolls and says that it will do. In some places the corrugation is examined at the end of the drying table and pronounced "too soft" or "satisfactory." In very few places is the corrugated product held over a period of eight hours or twenty-four hours or a week and then tested by some given method and pronounced either "good", "unusually fine", or "too poor to meet requirements."

Such a situation in an industry as large as this one is lamentable. It is also wasteful. It is costly to the corrugator, as he does not know when he is buying and receiving corrugating paper that meets his needs. It is costly to the paper manufacturer for it puts no premium on quality and gives no protection from the competitor who is marketing an inferior product. It is costly to the supplier of paper making chemicals because he cannot find out, even though his chemicals are used according to his directions, if they are producing a satisfactory sheet up to standards fixed by a scientific method, or whether they are failing to give these results. Such a lack of standards is also prejudicial to the interests of the liner manufacturer, as his high quality liners in a corrugated box may apparently fail to deliver the box to its destination in good condition; whereas, the .009 corrugating material may have been the weakness. In addition, his competitor may be selling a very inferior liner, and the corrugator may be finding it satisfactory because of the fact that the .009 sheet being corrugated between them is of unusually good quality.

There are mills today making first grade .009 material for corrugating, whose products are not getting the rating they deserve because they are being used between inferior liners in boxes, and, too, there are corrugators whose liners are high in quality but whose corrugating papers are not carrying the load.

The quickest way for this industry to get away from the penalties it is paying for failures in boxes is to establish standards of quality that can be used, and that must be met. The time is coming when as much attention will be paid to the quality of the corrugated one-third of the box, as is now given to the liner two-thirds, with a real saving to the trade.

General Co-operation Should Be Expected

The measurement of the quality of the .009 sheet is of vital interest to many who can be asked to co-operate. The first group of those interested in defining and establishing standards of performance is composed of mills manufacturing .009 paper. These include .009 straw, .009 chestnut, .009 pinewood, .009 kraft, and .009 chip that is dyed in imitation of straw. The second group is composed of the corrugated box manufacturers. The third group is the manufacturer of liners. The fourth group is the supplier of raw materials and chemicals to both the paper mill and the corrugated box maker.

The development of the corrugated box industry has proceeded at a very rapid rate. In 1922 there were 176,000 tons of .009 paper manufactured for corrugating purposes, practically all straw, and in

1929 this tonnage had increased to 415,000 tons.

In addition to the straw for corrugating in 1929, there was also a large tonnage of .009 chestnut and pinewood, and 1930 sees the introduction of the .009 kraft for corrugating purposes. We have always had with us some .009 chip that had been dyed to look like straw.

To complicate the situation still further, the year 1929 saw the introduction and adoption of the new caustic cook of straw, and the marketing of a so-called "hard" sheet. While it is admittedly a better product than the all lime cooked sheet, just how much better is it, and how does one know when it is good enough? Furthermore, what makes it good? The specifications of the new straw are the same as on the old except in the matter of weight, which has gradually been reduced from 38 lb. or 40 lb. to 34 lb. In reference to this last item the purchasing agent at the corrugating plant contends that 34 lb is the maximum weight of the .009 paper. The manufacturer of the paper says that he runs it 34 lb. average weight, and the superintendent in the corrugating plant advises the salesman that in all cases he receives corrugating paper weighing only 32 lb. whether he is using straw, chestnut, or only the dyed chip imitation. When questioned and asked to prove his statement, he produces half a dozen samples taken from rolls on the warehouse floor, and assures the listener that his contention is correct. In addition, he states that all the sheets are "hard" straw, but that the seller's is not quite hard enough.

A similar situation exists when the user of corrugating paper is forced to make a choice between the various commodities now on the market in order to please his customer. Without a definite measuring rule he cannot tell whether he is justified in maintaining a supply of one of these or the other, nor is he in a position to demonstrate to the user of boxes just which is the most serviceable and why. If the customer has no choice between the various .009 sheets, the box maker will then be in a position to use whatever stock he may have on his floor that meets the standards fixed by the industry.

Proposed Ways and Means of Standardization

The crushing resistance of corrugated straw or chestnut or any other sheet can be measured, and a standard of performance set up. The question naturally arises, "How shall the paper for corrugating be tested?" Since it is used as a corrugated product it should be in this shape when tested. The area of the surface of the sample should be reasonable in size. The time elapsed after passing through the corrugator should have a minimum fixed for it to allow the sample to cool to a normal temperature and to permit it to dry. If the test is made with a single faced sample, the facing sheet should be one in common use, and of normal characteristics.

At the present time, no cognizance is taken of the fact that there are .009 sheets being manufactured of such a degree of alkalinity that they deteriorate rapidly when they are in storage. This constitutes a direct loss to the corrugator and some definite measurement should be found to determine just which .009 sheet retains its qualities even after months of storage under normal conditions in the corrugator's warehouse.

Simple tests also indicate that there is a wide variance in the length of time required for water penetration of different .009 sheets. Where it is necessary to store .009 paper in conditions that are damp, or where there is considerable natural moisture in the atmosphere, certain .009 sheets will absorb this more readily than will others, and will become soft. Poor boxes will result. There are sheets of .009 paper being made that require a very long time for water penetration and yet these same sheets are easily corrugated and take silicate paste as readily as those that are more porous. They do not soften when stored, and the boxes manufactured from them are satisfactory after a long interval of time has elapsed since the sheet was manufactured or stored by the corrugator.

If all the makers of .009 paper for corrugating would pool their resources pro rata and establish a trade laboratory well equipped and capably manned, the industry would be saved many times its cost each year. Better paper would be made at lower cost. Proper standards would be set up for corrugator and paper mill, and the ultimate consumer would be better and more economically served. As a general rule the best help ever given to any industry is that supplied from within the industry itself by those whose experience and judgment can contribute to the solution of the problem on hand. This problem of proper standards of performance of the .009 corrugating sheet is one that is concrete and simple and capable of solution and when solved will move the industry forward to the place that it deserves by having contributed to the economic betterment of our present day civilization.

Detention of Defective Paper as Acceptance

By LESLIE CHILDS

AS a general proposition of law, a buyer of goods is bound to either accept or reject within a reasonable length of time after receipt. And, under this rule of law, the failure of a buyer to act positively, in one way or the other, in respect to the acceptance or rejection of goods, will usually amount to an acceptance.

Needless to say, this subject has been the cause

of a great deal of litigation in many different fields of business enterprise. And, as an illustration of the application of the foregoing rule to a case arising in the paper field, a brief review of the following decided case may be of interest.

Contract for Paper

In this case, the defendant entered into a contract for the purchase of 155 cases of paper from the plaintiff. This contract was in writing, and set forth the quality, price, and time of delivery of the paper. In fact the contract appears to have been the usual one of its kind in form and substance which are customarily used in the paper industry.

Pursuant to this contract, the plaintiff shipped 88 cases of paper which were duly received by the defendant. However, the defendant took the position that the paper was not up to the quality called for by the contract, and thereafter wrote the plaintiff as follows:

> "Your shipment of October 19th has just come to hand and the paper is not at all what it should be. We are sending you sample roll for your inspection. The shipment has been rejected with the understanding you are to replace the same with * * * paper of proper quality * * * "

Following this some correspondence passed beween the parties, and finally the defendant wrote further on the subject in the following language:

> "We expect you to deliver us 108 cases paper to be up to quality of shipment made August 1st, and we will hold the above 88 cases in our warehouse until you do so. * * * "

The plaintiff, it appears, paid no attention to the demand of the defendant that it ship paper of a proper quality to replace the 88 cases being held by the defendant. In fact, it appears from the report of the case, that the plaintiff at this point considered the continued detention of these 88 cases of paper on the part of the defendant as an acceptance.

And, at this point, it may be noted, that while the defendant in its first letter heretofore, clearly rejected the paper, it did not offer to return it. Further, the defendant in its second letter quoted heretofore placed itself in the position of holding the 88 cases of paper, which it claimed were defective, until the plaintiff had made delivery of 108 cases of paper up to the quality called for in the contract.

As may be expected, this situation developed into a serious dispute between the parties. The plaintiff refused to proceed further under the contract, and the defendant continued to hold the 88 cases of paper as a sort of hostage through which it hoped to force the plaintiff to perform. Finally, plaintiff brought the instant action for the price of the 88 cases of paper.

When this case was brought up for trial in the lower court, the principal question raised was, of course, the question of the legal effect of the detention of the 88 cases of paper by the defendant. Plaintiff took the position that this amounted to an acceptance. Defendant contended that it had a right to hold the paper pending the receipt of other paper which complied with the contract. The trial court found for the defendant. From this the plaintiff appealed and the higher court in passing upon the question raised reasoned as follows:

The Language of the Court

> "Defendant's letter of November 15th and 21st, taken together, show that defendant made only a conditional rejection and that defendant intended on and after the 15th to hold the 88 cases for the purpose of forcing the plaintiff to furnish other cases of paper in completion of their contract. After its examination of the goods on November 15, the defendant was obliged to either accept or reject the goods. It had no right to qualify its rejection by attaching to it conditions. * * *
>
> "To the last defendant held the 88 cases as a guarantee for the delivery of the 108 cases. Defendant's course constituted under our Sales Act, and would have constituted under our common law, an acceptance on the 88 cases. There is error, the judgment is set aside, and the cause remanded, with direction to enter judgment for the plaintiff. * * * " (116 Atl. 274).

Conclusion

The foregoing case constitutes a striking illustration of the application of the rule of law which requires a buyer of goods to either accept or reject within a reasonable time after their receipt. Admittedly, this case is somewhat unusual in that the defendant buyer attempted to hold possession of goods with the idea of thereby compelling the plaintiff seller to make further delivery.

In the light of this action, the fact that the buyer rejected the goods was of little avail since he did not place the goods nor offer to place them, within the disposition of the seller, consequently, we have in fact the simple situation of the buyer of the paper unreasonably detaining it without right. And, as we have seen, the court held such unreasonable detention amounted to an acceptance and rendered the buyer liable for the price thereof. When the facts and holding of the foregoing case are taken together, it indeed constitutes a valuable case for paper executives to have in mind when confronted by similar situations either in the purchase or sale of this commodity.

When Is a Man a Safe Worker?

When the employee becomes expert in seeing work done in a safe way, in hearing instructions given for safe working, in speaking and cautioning others of safe practices and in using his brain for thinking of safe ways to do his own work and protect his fellow workers, then will he be the safe worker and the longer will he enjoy the fruits of his labor. A Safetygram, by G. E. Ramer, Hercules Powder Company.

Current Thought by William Sibley

NO industry stands to-day entirely self-sufficient. Industry and commerce, in all their various component parts, are so inter-related that what affects one branch has a bearing upon the other. There are many evidences of the growing appreciation of this interdependence. The old method of determining business policies by intuition or the previous year's records are gradually giving way to fact-finding and inter-industrial analysis. Modern business has become too complicated —too susceptible to exterior influences—to be guided successfully by guesswork, individual head-work, or rule of thumb methods.

Never in all history has it been imperative for business men in every phase of commerce to keep fully informed of extraneous forces. The old law of supply and demand doesn't work so well as it once did because in this period of aggressive merchandising methods we make or break our "demand." Demand, of itself, never created sales, because "demand" and "sales" are practically synonymous. We **create** our own demand to-day—and this is a fact which would not have been true if spoken fifty years ago.

As an example: last year's total volume of the farm fence industry (woven wire, barbed wire, and steel posts) was about 275,000 tons—and this figure represented the result of a gradual decline from nearly 800,000 tons fifteen years ago. There are many reasons for the decline in fence business, but all of them may be summed up in the single statement "there is little fence being bought because there is practically none being sold." Fence manufacturers, their salesmen and dealers know all too little about the value of their own product to the ultimate consumer, with the result that the farmer nas sold the dealer a hard-luck story regarding fence, the while the automobile salesman was selling the farmer a new car. The need for fence on America's farms is greater than ever before, but the people who have fence to sell have failed to create their demand.

One might draw the conclusion from this instance (and the score of others which might be cited) that the fence industry was bad because of the influence of outside factors. The contrary is true. Extraneous factors would actually help boost fence sales if the fence industry would aggressively capitalize them.

According to Henry Ford in a recent issue of the Saturday Evening Post, business or industry are never bad because of outside forces. In every instance, he said, the bad condition of a business was brought about through errors **inside** that business. This is a broad statement, but I am inclined to agree. If paper is not being used as widely as might be—if the paper industry is suffering from overproduction—if the jobbers who sell or the printers who last work our paper are price cutters—its our own fault, no one else's.

There are several ways in which we can better our own judgment and accelerate the correction of our internal faults. One way, more important than ever before, is to keep constantly on the alert for new developments in every industry, however remote it may be from the business of making paper. Another thing for which we have increasing need is fundamental research. Here and there in our industry are companies doing very creditable work in elaborate research laboratories. Our industry needs more such laboratories, since it is only by their maintenance and proper operation that we can develop **new uses** for an **improved** product.

Turning our attention to recent but little known developments let me recite just a **few** of the more important. I believe a periodic recitation of the far-reaching improvement being made on every side of real value, because even a superficial knowledge of the astonishing progress being made and the multiplicity of changes being effected on every side helps us gain a new perspective of our own business, and perhaps better understand the great potential influence these changes have to our industry.

There is nothing particularly new, of course, about the use of artificial sunshine in hospitals, sanitariums, athletic clubs, and so forth. It may be news to some, however, to learn that one large mining company supplies synthetic sunlight to their workers. The ultra-violet and actinic rays of the sun are most beneficial to the human body, and to work deep in the bowels of the earth throughout the day means that such workers seldom gain the value of such rays since they rarely see the sun. One Idaho mining corporation has fitted up a "sun-room" with ultra-violet ray lamps, and these lamps play upon the men as they take their shower baths. The money value of such equipment is astonishing when it is known that such treatment prevents innumerable colds and other respiratory ailments, and that absenteeism because of sickness is greatly reduced.

Radio as a Teacher and a Salesman

Allied to light rays (since it is a form of ether vibration) is radio. And radio is a newcomer, the

value of which we can only guess. It is rapidly making America a nation of music lovers; broadening our knowledge of American history and giving us instruction in governmental structure, finance, investments, fashions, culture, literature, and politics. It is now quite possible to gain the equivalent of a college course through radio programs already on the air, then supplement that education with accurate knowledge of markets, investments, politics, current literature, and music.

Whether we like it or not, radio broadcasting is here to stay—and is rapidly cutting its way out of its chrysalis and emerging into a full-blown public service. Broadcasters who do their radio job intelligently, such as Halsey-Stuart in investments, Metropolitan Life Insurance Company in health, General Electric in music, various concerns in history, and others in political science, literature and culture, are mixing the altruistic with the selfish in a degree that pays high dividends. Last winter I controlled one local Chicago radio program which commanded the attention of hundreds of teachers and school principals and which, to my knowledge, impelled over 160 history teachers to give my program to the children in their classes as home assignment work—for oral or written discussion the following morning. Knowing radio broadcasting, I feel confident that should some paper manufacturer adopt any one of three broadcasting ideas I now have that they could do nationally what I did locally in Chicago last winter and thereby make their company name stand for far more than it now does—in thousands of schools and hundreds of thousands of homes. Radio is a sales promotional medium to be considered seriously.

But the sales or prestige building work of radio is only a small part of its value. Not long ago a lighthouse tender on Lake Michigan located a floundering ship in a dense fog, by means of a radio compass, then directed both ship and rescue party. Telephones and tickers on ocean liners give constant access to home offices for any passenger yet within 1,500 miles of land. New pages in the annals of radio history were written by Byrd's Antarctic Expedition, while in a constantly increasing number of places radio is serving commercial organizations in safety work, menial labor, and economy. Opening doors, stopping or starting machinery, grading products by color or shade, counting items, controlling street lights, weighing, and hundreds of other jobs are now being automatically performed by radio. What the uses for radio will be in another five years is a matter only for conjecture.

Metallurgical Marvels

We now have discovered a means whereby we can determine the metallic content of milk. Hematin, which carries oxygen into the blood, has been synthetized. Konel metal is a new alloy, compounded from nickle, cobalt and ferro-titanium. It is used for filaments in radio vacuum tubes, motor pistons, turbine blades, etc. Perminbar is another alloy of recent origin and is being used to load copper conductors in cables. Wrought iron, heretofore very expensive of manufacture, may now be produced in large quantities, and cheaply. The cost of helium has recently been cut in half by means of a new process. Another new metal has been produced which has the porosity of a sponge, weight lighter than aluminium, yet hardness and strength greater than steel. A seemingly perfect material for installations which lend themselves with difficulty to lubrication. Not long ago the first, all-metal dirigible was shown to the public. It was constructed of hundreds of strips of paper-thin metal running around the circumference of the ship, which were sewed together with a machine using fine, strong wire, instead of thread.

Discussion of recent, far-reaching developments in the fields of chemistry, metallurgy, and engineering might be continued to the point of fatigue. Indeed, so rapidly are deep-going improvements being made that the two pages allotted to this feature might, each month, be devoted to their mere recount—allowing no space for comment or discussion. And while there is no intention of so devoting this space, yet it remains that if such a monthly recount of industrial and commercial progress were to be made, it would be a most valuable feature. All because the periodic recitation of current changes would force home the realization of the importance of keeping informed of progress in all industries—that individual plans might be altered to suit expediency.

Never before has the individual manufacturer, whether his product be paper or pins, stood in greater need for alertness and vision. The manufacturer who continues to conduct his business as he did 25 years ago—with little or no regard for research, scientific developments, or current trends in other forms of business—will find himself occupying a very precarious position in the early tomorrow. On the other hand the paper manufacturer who is making strides today and who intends to keep that stride tomorrow is not only maintaining an elaborate research laboratory but, in several instances is paying a keen-minded individual a liberal salary for doing nothing but watch industrial progress, sift the good from the useless developments, and apply the recent changes to the individual business.

Not long ago a chap came to me for advice on his present "job" and help in getting another. Young man, perhaps 30 or 31. Well set up. A college man, out about ten years. Started at the bottom and worked up. Wasn't complaining about hard work or long hours. Had enjoyed them, in fact.

"I have a job," he said, "but I seem to be up against a stone wall. Seem to have got as far as I can go. I don't see anything ahead. Have a family of growing children and want to make a change before it is too late."

"Have you kept up your reading?" I asked him. "No," said my visitor quite frankly, "I haven't done any reading, not even technical journals, in recent years."

I looked out of the window for a moment, recalling to mind the tremendous changes that take place in industry every year and the stream of similar men who come to my office. Some young college men; some middle-aged or older men. Almost without exception they have stopped growing. They don't

read. They seem not to be fully conscious of the changes taking place all around them. They acquire a sagged-down look. The stream of progress passes them by.

It's hard to help people who do so little to help themselves. These men don't read because they are busy in the plant. They go home tired, or their family demands too much of their time. The fact is, when a man stops growing, particularly a man in whom a company has a large investment in training, the company and the man both lose. His family, too, loses more financially than it gains by monopolizing his leisure time.

We can all sympathize with these fellows. Amos 'n' Andy, Model A, and other diversions tempt us, too, but the hard facts of daily life tend more and more to impress us with the need for keeping in step, even when this means spending a couple of hours a week reading what progressive plant executives are doing.

As I remarked in "Current Thought" last month:

"So gripping is the hold of science and engineering on our whole life structure that to ignore the trends, to remain uninformed of the many changes taking place, to close one's eyes to developments, to blind one's self to the importance of the newer things, to continue in the belief that 'my business is different,' to fail in the realization that today no industry is extraneous to ours, is to court commercial disaster."

Utility of a Welding Outfit in a Pulp and Paper Mill

By H. E. STAFFORD
Electrical Engineer, Port Arthur, Ontario, Canada

PROBABLY no maintenance equipment will more quickly pay for itself and pay dividends to an industrial plant than the welding equipment. Welding is either done by an electric arc or by oxy-acetylene, the former being the most expensive in first cost, the latter in up-keep. Each outfit has its particular place and limitations, and although there are certain welds that can be performed by either, there are any number of welds that are restricted to one or the other type outfit alone. One feature about either type, the same operator can operate both, and around the average plant employing from 200 to 300 men, can be kept comparatively busy all of the time.

There is practically no limit to the number of jobs or type of work that can be repaired or constructed, since a welding outfit is a tool not only for making repairs, but also a tool for construction and destruction. Among the various constructive jobs where a welding outfit is a convenience may be mentioned such items as stair railings and guards for machinery made from pipe, cutting old boiler plate for the construction of steel tanks, construction of steel work benches, tables, etc., with pipe or angle iron frames and boiler plate or sheet steel tops, making steel gutter boxes for distribution cables, spot welding of wire guards on angle iron or pipe frames, and other jobs too numerous to mention.

Of the so-called destructive jobs may be included: the cutting up of worn out boiler plate to facilitate easier handling, the burning out of rivets on various pieces of equipment, the burning of studs and bolts from old machine foundations so that the floor holes may be filled with concrete and present a neat appearance, the cutting of old boiler tubes, the cutting of obsolete pipes and conduit runs embedded in concrete floors and many other applications.

When it comes to repairs, the number of jobs is practically unlimited. Among the various repairs that have been made in one mill, and the type of outfit used, may be mentioned, the following:

The connecting rod of a large air compressor became loose and practically wrecked the compressor. The fly and drive wheels were both cracked in several places, the flange connecting the cylinder head was split, and in fact the compressor looked as if it would bring so much a pound as scrap. With the aid of an oxy-acetylene outfit and several feet of half inch brass rod and spelter, this compressor is as good as it was when received from the manufacturer.

The cylinder head of a large hydraulic press cracked. As the head was of cast iron and several inches in thickness, it was impossible to weld by oxy-acetylene. It was, however welded with an electric arc, and has withstood the tremendous pressure imposed on it for a number of years with no sign of giving out.

The number of repair jobs that have been accomplished with the welding outfits at this plant will run into several hundreds, and comprise such jobs as: motor end bells, motor feet, valve stems, shafting, sprockets, building up new teeth in gears, valve wheels, machine brackets, pump casings, and impellors, repairing holes in steel, cast iron, copper, brass and lead pipes, and every other job impossible or impractical to do by any other means.

For copper, thin brass, sheet steel and certain castings where the parts surrounding and adjacent to the break are affected, the electric arc offers advantages not inherent to the oxy-acetylene welder. Spot welding is also done more advantageously with the arc. In the welding of rotor bars to end rings, we have used both types of outfit to equal advantage. The smaller rotors being more adapted to the electric arc.

The main advantage of either type outfit is the ease with which they may be moved from place to place and easily set up. The electric welder is mounted on a truck, and when provided with a few feet of cable is ready for instant use simply by plugging into a circuit. The same is true with the oxy-acetylene welder, since the two tanks and necessary hose is also truck mounted.

The Paper Industry 1930 Safety Contest

April Scores—(Only)

Perfect Record in 39 Mills

PERFECT SCORES

	ENTRANT	MILL	LOCATION
GROUP A	Kimberly-Clark Corp.	Falls	Niagara Falls, N. Y.
	Canada Power & Paper Corp.	Brigo	Shawinigan Falls, P. Q.
	The Champion Coated Paper Co.	No. 2	Hamilton, O.
	Bird & Son, Inc.	East Walpole	Massachusetts
	Kimberly-Clark Corp.	Badger-Globe	Neenah, Wis.
	Kimberly-Clark Corp.	Niagara	Wisconsin
	Fox River Paper Co.	Fox River & Telulah	Appleton, Wis.
	Marinette & Menominee Paper Co.	Park & Victory	Marinette, Wis.
GROUP B	Nekoosa Edwards Paper Co.	Nekoosa	Wisconsin
	St. Croix Paper Co.	Woodland	Maine
	Cornell Wood Products Co.	Cornell	Wisconsin
	Container Corp. of America	Ogden	Chicago, Ill.
	Hoberg Paper & Fibre Co.	Hoberg Division A	Green Bay, Wis.
	The Falls Manufacturing Co.	Oconto Falls	Wisconsin
	Finch Pruyn & Co., Inc.	Glens Falls	New York
	Crocker McElwain Co.	Holyoke	Massachusetts
	Ontonagon Fibre Co.	Ontonagon	Michigan
	Alton Box Board & Paper Co.	Federal	Illinois
	The Crystal Tissue Co.	Middletown	Ohio
	Hollingsworth & Vose Co.	W. Groton	Massachusetts
GROUP C	Monroe Paper Products Co.	Monroe	Michigan
	Port Huron Sulphite & Paper Co.	No. 1	Port Huron, Mich.
	The Adams Bag Co.	Chagrin Falls	Ohio
	Sorg Oglesby Smith Paper Co.	Oglesby	Middletown, O.
	Marathon Paper Mills Co.	Ashland	Wisconsin
	The Upson Co.	Lockport	New York
	International Paper Co.	Webster	Orono, Me.
	Marinette & Menominee Paper Co.	Menominee	Michigan
	Bird & Son, Inc.	Phillipsdale	Rhode Island
	International Paper Co.	Livermore Falls	Maine
	Canadian International Paper Co.	Fibre Board	Gatineau, Que., Can.
	Thilmany Pulp & Paper Co.	Wisconsin Tissue	Appleton, Wis.
	Wardlow-Thomas Paper Co.	Middletown	Ohio
	International Paper Co.	Riley	Maine
	The Gardner & Harvey Co.	No. 3	Middletown, O.
	United States Gypsum Co.	Gypsum	Ohio
	Union Bag & Paper Corp.	Allen	Hudson Falls, N. Y.
	Continental Bag & Paper Corp.	Greenwich	New York
	Defiance Paper Co.	No. 3	Niagara Falls, N. Y.

IMPERFECT SCORES

GROUP A				GROUP B				GROUP C			
		Points				Points				Points	
KEY	Rank	Credit	Debit	KEY	Rank	Credit	Debit	KEY	Rank	Credit	Debit
A-25	9	510.160		B-28	13	353.500		C- 7	20	299.980	
A-14	10	499.960		B-31	14	309.900		C-19	21	60.620	
A-30	11	491.420		B-35	15	296.380		C-15	22	33.160	
A- 2	12	464.920		B-30	16	263.520		C-22	23		22.580
A-12	13	449.440		B- 7	17	216.660		C-38	24		26.320
A-21	14	430.180		B-11	18	201.100		C- 5	25		129.960
A-24	15	426.900		B- 2	19	160.260		C-37	26		135.280
A-15	16	425.180		B-41	20	104.440		C- 9	27		135.380
A- 5	17	393.420		B-33	21	104.420		C-30	28		155.980
A-20	18	250.320		B-14	22	41.000		C- 8	29		159.380
A-33	19	195.960		B-29	23	22.560		C-45	30		351.160
A- 4	20	190.400		C- 1	24	3.400		C-34	31		476.840
A-19	21	104.460		B-24	25		89.780	C- 2	32		589.600
A- 1	22	92.420		B-16	26		186.020	C-11	33		1026.300
A-27	23		15.700	B- 9	27		204.720	C-24	34		1110.165
A- 3	24		30.940	B- 1	28		219.000	C-21	35		1787.100
A-31	25		132.080	B-40	29		224.780	C-41	36		2775.420
A-18	26		386.000	B-18	30		250.360	C-10	37		3496.580
A-13	27		458.400	B- 4	31		326.300	C-32	38		4214.300
A-22	28		668.380	B-34	32		724.200	C-16	39		4475.540
A-32	29		712.880	B-26	33		778.940				
A- 9	30		1429.520	B- 6	34		1479.440				

April reports not received: A-23, A-29, A-34, B-5, B-27, B-38, C-12, C-33, C-44.

Withdrawn for failure to submit reports according to rules: B-13, B-42, C-6, C-40

Closed down: C-3

Dr. Viggo Drewsen

Dr. Viggo Drewsen, for many years chief of the research department, of the West Virginia Pulp and Paper Company, New York, passed away peacefully at his home in Larchmont, N. Y., on Sunday, May 18, at the age of 72. For eight months past he had been in failing health and had retired from active participation in laboratory work, but hopes for his recovery had been entertained until a few weeks after his last birthday, when he began to weaken and unconsciousness set in.

Although generally regarded as a Norwegian, Doctor Drewsen was born near Copenhagen, Denmark, April 13, 1858, and was thus a Dane by birth. He was taken to Norway by his parents when a year old. He attended school in Norway in preparation for admission to the University of Christiania, as Oslo was then called, and was graduated in due course. Following up his chemical studies he went to Wiesbaden, Germany, where he studied under Prof. Remigius Fresenius and acted as his private assistant. Fresenius was then a world renowned authority on analytical chemistry, and his writings on the subject are still consulted.

Later he went to Munich where he entered the University of Bavaria, becoming assistant to Prof. Adolf Baeyer. It was in Baeyer's laboratory that he independently achieved the synthesis of indigo, being the first to produce the substance by artificial means. Four patents covering the process were issued to him and Professor Baeyer by the United States Patent Office, May 9, 1882. These patents were the first of a long series bearing his name which related to wood pulp manufacture, beginning with one granted September 26, 1893, the year he came to the United States, on the recovery of organic matter from sulphite waste liquor.

Doctor Drewsen took high honors in his studies at the University of Bavaria. He was graduated as a doctor of philosophy in chemistry, summa cum laude, from that university in 1882.

Doctor Drewsen's ancestors were among the earliest paper-makers of Denmark, there being records of their connection with the industry as owners of mills back to 1700. It was natural therefore that he should turn his attention to the newer developments in wood pulp manufacture that were beginning to be heralded in the late 'eighties and he went over to technical pulp and paper studies, forming a connection with the Boehnsdalen sulphite pulp and paper mills at Boen in Norway, mills which are still in active operation.

When Doctor Drewsen came to the United States in 1893, he took out citizenship papers and made numerous connections as a consulting chemical engineer for the installation of his apparatus for separation of sulphite gases, bisulphite liquor, the utilization of spent lyes, and the burning of pyrites for the manufacture of bisulphite liquor. But his earliest and perhaps best known contribution to chemical pulp manufacture was the invention of a method and process of recovering sulphur dioxide gas in relieving sulphite pulp digesters. Reference has been made to an early patent of his covering the utilization of spent liquors and other wastes from sulphite pulp mills.

Processes for the manufacture of paper products from cornstalks were the subjects of patents taken out in Doctor Drewsen's name, June 16, 1903; May 9, 1905; September 5, 1905, and May 14, 1907, six in all. During the world war he perfected a method of manufacturing a pure cellulose from wood pulp that could be nitrated and used for explosive purposes. During his connection with the West Virginia Pulp and Paper Company many processes were invented and patented by him for treating waste sodium and magnesium sulphite liquors for the recovery and utilization of chemicals, as he was convinced that acid sulphite of lime would be ultimately displaced by the neutral sulphite of either soda or magnesia in the cooking of wood for pulp manufacture. An invention of great popular interest on account of its novelty consisted of the manufacture of concentrated or solid carbon dioxide, sometimes called dry ice, from flue gas. At the same time he conceived the idea of collecting and concentrating the carbon dioxide gas that escapes from sulphite towers so as to

make the sulphite tower do its own refrigerating in an automatic way, but this was never developed commercially.

Doctor Drewsen was a man of great originality as well as independence of mind and expression and he had a wholehearted dislike of pretence and hypocrisy. To those who gained his confidence and friendship he was always inspiring and helpful, and he will be greatly missed. He is survived by his wife, one son, two daughters and five grandchildren.

The Laboratory Pays Well

American Writing Company through Its Research Laboratory Produces Papers for Specific Uses and Advises in the Selection of Papers

PAPER manufacturers, as a rule, maintain a laboratory for the control of their product. In the American Writing Paper Company, Incorporated, Holyoke, Mass., the laboratory is, in addition, engaged in the development of paper for new uses,—a dual function, resulting in increased prosperity and business growth. To insure the success of this phase of its activities, the laboratory has at its disposal a minute paper mill complete in every detail. It has the facilities of a chemical laboratory and utilizes the most modern methods of physical testing under constant humidity control. At the hands of these agencies, the formulas and methods for new types of paper are worked out.

Practically all paper is made with a particular use in mind. Before the laboratory technician starts on a new design, he must first define his problem and, in so doing, consider the following factors which embrace the scope of paper problems, such as:

1. Must the paper be non-stretchable?
2. Is it to be water-resistant?
3. Is it to be oil-resistant?
4. Is it to be chemical-resistant?
5. Is the color to be permanent or fugitive?
6. Is it to be absorbent or non-absorbent?
7. Is it to be dense or porous?
8. Will it have considerable handling?
9. Will it have a long life or is it only made for temporary service?

The Research Laboratory has produced many papers for specific uses. For instance, an offset paper, developed by the laboratory, has a high utility value because, in addition to taking a printed impression well, it has a constant moisture content and stretch has been reduced to a minimum. This paper has been of material assistance to a well-known printing establishment in building up and maintaining a large portion of its business.

Bakelite impregnation of paper was another problem investigated by this laboratory. The paper base used must take a uniform penetration of Bakelite or similar chemicals and must absorb them readily. The process of impregnation requires a conversion period of from six months to one year with the final product uncertain until the end of that time. The product developed by the laboratory by specific testing gives a uniform paper which anticipates the final products and assures good working qualities immediately.

In the making of paper drinking cups, the Laboratory has been able to eliminate the after treatment of waxing. This was done by adding to the beater, waterproof agents and giving the paper a hard sizing. The resulting paper withstands both water and heat and does not require waxing.

Special blue print papers developed through this laboratory presented several nice chemical and physical problems. This paper is made to withstand water treatment and must give the proper color and withstand the chemicals used in developing.

Other instances are many. A random glance at the daily record book of this laboratory shows:

A wrapping paper for films which is chemically resistant to prevent fogging and at the same time has sufficient strength to take up the wrapping strain.

A stock for bottle caps. Snap, resiliency and compactness are the charecteristics called for In addition, the color must be such as to carry out the suggestion that the milk is handled in a sanitary manner. Such a stock must absorb some paraffin but cannot take up too much.

A gelatin process used in producing sepia prints. Here the laboratory used a short-fibered paper which held the necessary coating but would not curl.

A cigarette paper which burns evenly and contains a filler producing a carbon dioxide film which prevents flame.

A paper for wrapping electric cables. This paper was given the proper dielectric strength by impregnating with oil and Bakelite.

A waterproof paper to be used as a leather substitute. This was produced by sizing and in some cases by using a waterproofed clay coating. This is used in the manufacture of suit cases.

An anti-tarnish paper in which silver may be wrapped and stored.

A music roll paper with a minimum of stretch and shrinkage to insure proper registration.

A stock to be used in the manufacture of paper matches, sufficiently strong for scoring and treated to minimize the afterglow.

These are a few of the many new papers that have been studied by the company through its Research Laboratory for its customers and to meet general market trends.

Considerable study has been made of the serviceability of papers which will receive extensive handling or which must remain intact over a period of years. This is not an easy task, for although the average paper contract is placed on a rag content basis, such a specification is by no means an accurate index of the wearing quality of the paper. Durability is dependent upon the quality as well as the quantity of the rags and their treatment and, for accurate rating, papers should be subjected to laboratory testing.

The company recommends the following test as a reliable test for quality. For instance, a bond paper to last 25 years should, according to a standard test set by the laboratory, withstand approximately 800 double folds with the grain or 400 against the grain. Such a standard contains 50 per cent good quality rag stock.

In the process of developing paper of predictable longevity, this company has co-operated with numerous corporations by analyzing the papers used in their business forms. The laboratory also advises the company's customers in the selection of paper. Where the paper requirements are known, it will recommend suitable types and grades of paper.

The opinion of the officers and directors of the company concerning this extension of the function of the laboratory into the service field, is best represented by a recent comment of the president, who said: "We are convinced that this laboratory pays, and pays well."

Frank P. Lyden, Mill Consultant

Frank P. Lyden, formerly manager of manufacturing, International Paper Company, has opened an office in the Knickerbocker Building, Broadway and Forty-second Street, New York, and is inviting inquiries for his services as a paper and pulp mill consultant.

Mr. Lyden has had many years of practical experience in the manufacture of nearly all grades of paper, including bond, waxing, roto., kraft, catalogue and groundwood specialties. He solicits inquiries concerning beater control, waste elimination, increased production and lower costs investigations. Being prepared to make confidential reports of value to his clients.

The Holmsund Company, The Svartvik Timber Company and the Sund Company, of Sweden, report increased profits for 1929, which profits accrued by a marked increase of production and sales during the year. These companies are subsidiaries of The Swedish Pulp Company, a holding company in the wood pulp and lumber industry of Sweden, which was organized in the fall of 1929 by Krueger and Toll Co.

How Hand Trucks Reduced Costs

Conveyors Not Always the Answer to Material Handling Problem

By J. W. DICKINSON

Mac Sim Bar Paper Company, Otsego, Michigan

The Mac Sim Bar Company with plant and office located at Otsego, Michigan is engaged in the manufacture of high grade paper stock—boxboard.

Plant employs approximately 275 people and produces 200 tons of board per day using one 130-inch and one 115-inch trim vat type paper machines.

The mill has been in operation for about twenty-five years and is known as one of the outstanding quality houses in the boxboard industry.

WE have reduced material handling cost 33⅓ per cent. This is an improvement brought about without the use of conveyors or power trucks, although a surface analysis of our condition indicated such expensive equipment to be necessary.

Each year we handle from sixty to seventy-five thousand tons of baled sulphite and mixed waste. This is unloaded directly at our docks which have a capacity of eighteen cars. It is then removed by two-wheel trucks and elevators to various storage spaces located on the three floors and basement of our plant and in two adjoining sheds. Seven separate and distinct classes of material are handled, each having a varying bale size. As a further complication, materials are received at irregular intervals.

Time Limitations Involved

The executives of our company, as in other organizations operating under the intensive business demands of today, did not feel that time would permit their making complete analysis which the situation so evidently required. Accordingly, we deemed it advisable to employ outside engineering talent, believing that by so doing we would receive an unbiased opinion from those equipped to handle such matters. We came to the conclusion that the outside viewpoint was absolutely essential to the solution of our problem. For this reason, we engaged The Sherman Corporation of Chicago, Management and Business Engineers.

The solution given below is the result of their analysis:

In making a study of the problem, the first step was to prepare a complete flow chart showing the existing movement and disposition of all incoming materials. From this chart, it was at once apparent that storage space was not being utilized to the best advantage and that several instances of back-tracking, or unnecessary movement, were taking place.

Consequently, a second chart was prepared, giving a better distribution of storage space according to classes of material while at the same time correcting certain faults which existed in material flow. With this chart in force, we are in a position to intelligently consider the application of conveyors to our problem.

We knew the tonnage to be handled, the various flow lines over which this tonnage must be moved and at what seasons of the year material would be available.

Conveyors Seemed Necessary

At first glance, it appeared that certain conveyor installations were necessary. We had, for instance, a long haul from the cars to the elevators which service our upper floors. Analysis was then made of the time which would be required to load materials on, as well as remove from a projected conveyor installation. We also estimated the cost of a conveyor installation necessary to handle this material movement. Comparing this cost with the time and consequent labor to be saved, and taking into account depreciation and all other factors, it became evident that the expense would be unwarranted.

Paradoxical as it might seem, we were unable to find any method of handling paper bales from cars which would equal, from a standpoint of efficiency and cost reduction, the two-wheel truck. When once a bale is loaded on a truck, our tests developed that it would be folly to remove it therefrom until the truck had reached the storage destination. Labor involved in loading and unloading a heavy bale offset the savings to be made as the result of a more rapid handling method. This, of course, is not a general statement, but it is one which applied in our instance.

Conveyors being definitely out of the picture, our problem then resolved itself into one of better labor control. Formerly, all men engaged in moving and storing materials were employed on a straight day work basis of payment. However, time studies made in the course of our analysis brought out very forcibly that these men were not working with the desired degree of effectiveness.

The answer here was to establish ways and means for measuring the work and to pay the men proportionately as they measured up to what we thought to be reasonable requirements. In moving material from the cars and storage spaces and transferring from the various storage spaces to the beaters, many operations are involved and so it became necessary to make time study covering the performance of each of these operations in order to establish standards.

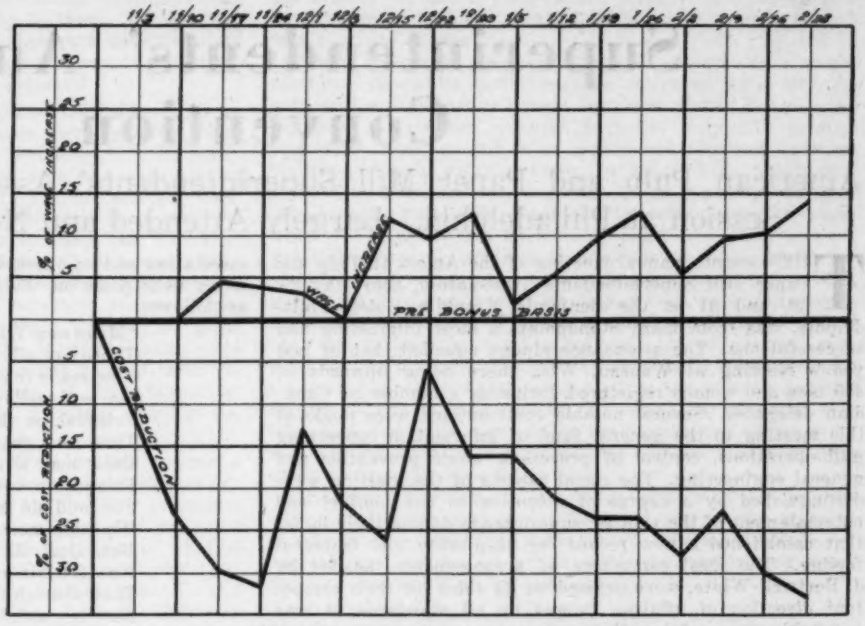
Unloading platform at plant of Mac Sim Bar Paper Co., Otsego, Michigan

Man Hours Per Ton Basis

We decided to base everything on the man hours per ton required to handle the different classes of materials; then by tabulating the materials handled for a given period of time and applying to this tabulation the standards of wage payment, we were able to determine the time which should be allowed the unloading crew for performing its work. Against this, we set the actual time put in by all members of the crew. Then to

furnish an incentive for the men to cut down performance time, we agreed to pay, in the form of a bonus, a value equal to half the time saved over and above standard. In this manner, when work is performed in exactly the time allotted, no bonus is paid, but when performance is such that actual hours taken are less than the hours allowed, then the difference is divided in half and given to all men in the material handling crew.

When this plan was placed into operation, immediate results were very gratifying. Almost from the first week, material handling time was cut down so as to be below standard and the men started to earn a bonus. The results over a period of several months are shown by the accompanying curves. It will be seen here that while costs have been reduced approximately 33⅓ per cent the earnings of the men have increased almost 15 per cent, which we believe is very satisfactory to both the workers and Management.



Effect of incentive plan on costs and wages

The point which needs emphasizing is that in this day and age, when so much thought is given to straight line production methods through the use of conveyors, one is apt to forget that very often labor is the most important part of the problem. While conveyors have, in many cases, proved to be wonderful cost reducers, still, when one takes into account installation as well as depreciation costs, theoretical savings do not always work out in practice.

Our problem was one which was solved only as the result of a carefully made analysis. We first visualized our condition, then, through preparing real figures unsold ourselves on conveyors, and finally, through installing a suitable plan of wage payment, were able to reduce our costs as well as increase the earnings of our workmen.

Reactions of Inks and Papers

ARTHUR S. ALLEN, color engineer, New York, was the principal speaker at the luncheon meeting of the New York division of the Salesmen's Association of the Paper Industry held Monday, May 9, at the Hotel Commodore. He was assisted by W. G. Houck, Jr., who exhibited and described the construction and operation of a color comparator and reflectometer which can be used for measuring the values of colored paper, as well as for determining the relative whiteness of white paper.

Urges Closer Co-operation Among Printers, Papermakers and Ink Manufacturers—Mr. Allen's talk dealt chiefly with modern developments in the manufacture of standard process colors and the reactions of colored printing inks with different types of papers. He has had some unfortunate experiences in getting the right kind of papers, and as a consequence advocates a closer degree of co-operation among paper manufacturers, inkmakers and printers. In speaking of the difficulties encountered by inkmaker and printer which should receive attention from the papermaker, he did not hesitate to say that paper manufacturers should know more about the relation of ink to paper and not leave problems of incompatibility of ink with paper to the printer. Indeed, he advocated the employment of a printer and a printing press in the research departments of paper mills, and urged greater co-operation between ink manufacturers and mills in working out process printing problems.

Soap Wrapper Problems—Mr. Allen drew attention to problems connected with paper used as soap wrappers. He said that one large soap company had experienced great difficulty in getting paper manufacturers to co-operate with them in the production of a paper that would withstand the action of caustic alkali and at the same time be free from any tendency to bleach or change the color of the ink used in printing.

An Instance in Point—Pointing to the need of better co-operation among all concerned, Mr. Allen instanced the case of a large manufacturer of hospital supplies who was obliged to wait several months for a supply of paper because of the apparent disinclination of the paper manufacturer to co-operate with the paper jobber and the printer in elaborating a paper that would stand a steam test. He advocated the installation of a printing press in mill laboratories with a view to familiarizing the papermaker with the qualities required in a paper to suit certain inks.

Chairman Rantoul admitted that the paper industry needed to go in for a little more research of the kind indicated by Mr. Allen and thought that if a paper mill did put a little printing press in the mill more paper might be sold.

Not Always the Papermaker's Fault—Mr. Allen softened his criticisms of the attitude of paper manufacturers toward the investigation of printers' troubles by admitting that several mills were now doing notable research work and that the paper manufacturer was not always to blame for the rejection of paper shipments. He knew of a case where a printer had turned down a large consignment of paper because the ink did not take well on it. The supposedly defective lot of paper was taken back by the manufacturer and a different consignment shipped. The new paper did not differ essentially from the old but gave apparently superior results. It was then discovered that in the first instance the yellow ink had been applied and allowed to stand for ten days before being used with the other inks. On the substitute lot of paper the job was completed with dispatch and no fault was found. Mr. Allen's parting advice was for the papermakers to get closer to the jobbers and not let the printer put one over on him.

Mr. Allen's talk was followed by a general discussion of the relation of paper manufacturers and their salesmen to purchasing agents on the one hand and paper merchants on the other. One of the men present made the suggestion to Mr. Allen that whenever he had any problem concerning the furnish of paper in relation to the ink to be used upon it, he should put the problem before the Technical Association of the Pulp and Paper Industry which could be confidently expected to get the best advice without loss of time.

Superintendents' Annual Convention

American Pulp and Paper Mill Superintendents' Association Holds 3-Day Session at Philadelphia. Largely Attended and Notable Gathering

THE eleventh annual meeting of the American Pulp and Paper Mill Superintendents' Association, held May 29, 30, and 31 at the Benjamin Franklin Hotel, Philadelphia, was from many standpoints a most interesting and successful one. The attendance almost equalled that of last year's meeting at Wausau, Wis., there being upwards of 450 men and women registered, including a number of Canadian delegates. Several notable contributions were made at this meeting to the general fund of information concerning mill operations, control of processes, waste prevention and general engineering. The social aspects of the meeting were distinguished by a degree of attention to the comfort and entertainment of the visiting superintendents and their ladies that established a new record for hospitality and fraternal feeling. The local committee of arrangements, headed by J. Bertwell White, were praised on all sides for their competent direction of affairs. Judged by all standards, it was a notably successful gathering.

Committee Chairman

The registration of members and guests was handled efficiently by Mrs. Joseph H. Dow, other committee chairmen comprising Joseph E. Plumstead, finance; Roy H. Underdown, arrangements; Frank E. Winslow, program and entertainment; H. L. Joachim, transportation and mill visits; Joseph H. Dow, golf tournament; John Bingham, reception; Mrs. James G. Ramsey, ladies' entertainment. C. E. Whitworth acted as secretary to the general convention committee under J. Bertwell White.

In addition to a delightful boat ride on the Delaware river, following a short business session at the opening of the convention on Thursday morning, there were two banquets on successive evenings, with special orchestra music, singing and vaudeville entertainment, besides the usual speech-making, educational addresses and awards of honors and prizes.

Convention Opened by J. Bertwell White

The convention was called to order by J. Bertwell White, general chairman of the convention committee, who extended a hearty welcome to everybody. He said the committee had worked hard to assemble the gathering and expressed appreciation to all on the committee for able and loyal support. He made grateful acknowledgment of generous financial contributions from interested firms and individuals, remarking that it took a lot of money to cover the many items of expense involved in such a big convention.

Chairman White urged the members to pay strict attention to the papers and discussions so as to take back with them something that was worth while to the mills they represented and to themselves. "You will get out of this convention just exactly what you put into it," he said, and added: "So let's put a lot of personal interest into it, get our money's worth, and everybody will be benefited and happy."

He then turned the meeting over to President James Garfield Ramsey, at the same time presenting him with a new gavel for use during the convention.

President Ramsey expressed appreciation for the gift which he said would be cherished by him as a treasured remembrance of the meeting. After relating an anecdote to illustrate the universality and power of prayer, he called upon the Rev. William Barnes Lower, D.D., to deliver the invocation, handing him a list of the members of the association who had passed away during the past year. The Reverend Doctor read the list while the members stood in silence. He then invoked the Divine blessing on the work of the convention and paid a beautiful tribute to the value of friendly association and co-operation, followed by the recitation of a lovely little poem on "Friendship" by Prof. Henry Van Dyke, as follows:

"Make new friends, but keep the old;
Those are silver, these are gold.
New-made friends, like new-made wine,
Age will mellow and refine.
Friendships that have stood the test,
Time and change, are always best.
Brow may wrinkle, hair turn gray,
Friendship never owns decay;
For 'mid old friends kind and true,
We once more our youth renew.
But, alas! old friends must die,
New friends must their place supply.
Then cherish friendship in your breast;
New is good, but old is best.
Make new friends, but keep the old;
Those are silver, these are gold."

Official Welcome to Philadelphia

The convention was to have been welcomed to the city by the Hon. Harry A. Mackey, Mayor of Philadelphia, but he had been unexpectedly commissioned to sail for Antwerp to open the display made by Philadelphia at the International Exposition in the capital of the Netherlands and the duty of welcoming visitors fell to his assistant, William L. Thatcher, who gave a long and interesting account of the industries of Philadelphia and places of historic interest. He said he was happy to extend the hand of welcome to visitors from the forty-eight states of the Union as well as to the representatives of the sister State to the north, the great Dominion of Canada. He named the places of chief historic interest and urged his hearers not to miss paying a visit to "dear old Temple University" which was founded as the result of the gift of a penny and a little girl's dying prayer. He suggested a walk past the institution on North Broad street in the evening for the purpose of watching the stream of students entering the building, 80 per cent of whom work during the day and study at night.

Response by Mr. Terry

The response for the association was made by Killey E. Terry, of S. D. Warren Company, Cumberland Mills, Me., who said that all were delighted to meet in convention in the wonderful city of Philadelphia and would carry back with them memories of a delightful experience.

President's Address

President Ramsey read his annual address in the course of which he recounted the things he had aimed at during his term of office. He had tried especially to reach out and bring in new members, as he believed that every pulp and paper mill superintendent in the country should be a member of an association which has for its aim the betterment of the paper industry. With the object of encouraging the growth of local divisions he had tried to attend at least one meeting of each division during the past year. His impressions of these meetings were stated by him in the following words:

Presidents' Impressions of Division Meetings—"After attending these meetings I believe we must have chosen supermen for the officers of our divisions this year, for every meeting I attended looked like a national convention. The programs they arranged were a credit to our association and I know they did much to interest and instruct our membership. Every meeting had an attendance of over 100, and because of the fact that some of these were monthly meet-

ings you can readily see the progress along this line of our work. I would take this opportunity to thank the chairmen and all others who have assisted in this good work for their co-operation and assistance in making this, one of the greatest activities of our association, a success."

Appreciation of Support—He complimented Killey E. Terry and his associates on the Mill Service Committee for their work during the year, and also thanked Robert L. Eminger, secretary, for his co-operation and loyalty. Appreciation for services was also extended to L. D. Post and his staff, as well as to the paper industry periodicals generally, the American Paper and Pulp Association and the Technical Association. He expressed his belief that the American Pulp and Paper Mill Superintendents' Association was one of the finest bodies of men ever banded together. He considered it well to remind his audience that though in these days of higher education most of the superintendents were without a college education they had made good in their vocation or they would not be members of the association. They had made good because they possessed intelligence. Developing this thought he said:

The Appreciation of Intelligence—"People often possess a lot of knowledge and don't know how to use it, so it does not do them much good. Intelligence is your ability to adjust your thinking to the ever changing conditions and problems of life; that is, you have adapted what you have to what is needed. Intelligence is not ability to learn, nor power of memory, nor the fund of information stored away in the mind. A person may be intelligent whose learning ability is limited and memory poor. A college education never has and never will make a man intelligent; such training helps, but unless your knowledge lends itself readily for use or is adaptable to your work, it will not promote the intelligence of the man possessing it. This explains why some men with little or no education have advanced to be leaders in industry. They may not have known much but they were able to turn what they did know to a practical usefulness."

President Ramsey accordingly counselled the men not to worry about missing education but to direct their thoughts to applying successfully the knowledge they had. "Let your knowledge come out, make your thinking fluid so that you can change it when needed; always try to make it more adaptable."

In closing he besought for his successor the same co-operation and loyal support that had been extended to him during his term of office.

Closed White Water Systems

Only one paper was read and discussed at the morning sitting because of a prospective early adjournment for a boat trip down the Delaware river for a tour of inspection of the Pusey-Jones machine shops and the experimental color laboratories and plants of E. I. du Pont de Nemours & Co. The paper referred to was one on "The Closed White Water System," by C. M. Baker, engineer of the American Paper and Pulp Association.

Principles of White Water Utilization

Mr. Baker began by paying a compliment to the superintendent, saying he welcomed the opportunity to speak directly to the heart of an organization, the superintendent. For it is he who throbs when the executive pushes the button. The superintendent directs the orders of the executive and the findings of the technical staff through the various veins of the organization to knit together the raw materials into the finished product. The superintendent, he said, was responsible to the executive for production and quality, "regardless of the new ideas thrust upon him by the technical staff, equipment and supply men, and white water fanatics."

He described the basic principles of white water utilization as that of pumping the white water back into the system and using it in place of fresh water. Accordingly the only fresh water used was that required to replace evaporation losses. The paper machine becomes the saveall, the fiber being recovered to go into the finished product. He described the process of utilization, saying that the first step consisted of returning the more concentrated white water to the beaters for beater makeup and dilution; the second step was concerned with the substitution of white water for fresh water on the showers.

Where flush stock from the pulp mill is used on the paper machines the white water may be conveyed back into the pulp mill and substituted there for fresh water. Savealls are necessary to recover material from the pulp mill because relatively large quantities of water are required to wash the chemicals in solution from the pulp. Very substantial reductions, however, may be made in the quantity of water used in many pulp mills. Reduction in water consumption and white water utilization go hand in hand.

Mr. Baker gave detailed descriptions of white water installations in various types of mills. He mentioned a book mill in which the volume of waste had been reduced to about 1,900 gallons per ton of product, while the fiber losses had been cut to less than two pounds per ton of product, one-tenth of one per cent. Sedimentation savealls were used, the concentrated white water being sent to the beaters and the saveall effluent to the showers. The operation of closed systems in board mills, news mills, kraft mills and tissue mills was touched upon. It was noted that chlorine was used generally to prevent slime formation.

Mr. Baker concluded an interesting paper with the observation that the superintendents hold the key to the problem of white water utilization. He is the one who must install and operate any system of white water utilization and must therefore be "sold" on its practicability.

Discussion of Engineer Baker's Paper

President Ramsey asked for a full and free discussion of the paper, as he felt sure that every superintendent would have something worthwhile to say on this subject.

Fred J. Rooney asked if the closed white water system had been used long enough to determine whether any deleterious action on the stock resulted. Mr. Baker said that no trouble of this kind had ever been experienced, and Tom Harvey volunteered the information that in his mill the closed white water system had been operated for four years without giving any trouble; in fact the life of the casings had been increased. Similar testimony was given by E. C. Gildenzopf who added that in his experience felts lasts longer with a closed system. He told of some trouble caused by the deposition of slime spots on the web which had led to the formation of spots or holes in the converting process and asked what the remedy might be.

Mr. Baker asked if any sterilization was practised by means of chlorine and was answered in the negative.

A member brought up the question as to whether it would be more economical to use hot water condensate in the beaters instead of white water, and was told that this was a matter which would have to be decided by the individual mill after a comparison of the relative value of the fiber in the white water and the value of the heat in the condensate.

Froth and Foam Troubles—Charles H. Kephart said he had experienced trouble from foaming on the fourdrinier machine from the use of white water that had been sterilized with chlorine and Mr. Baker admitted that there was a tendency of chlorine to lower the pH and cause foaming. Mr. Kephart contended that it was necessary to have the white water used on the showers free from fiber and asked Mr. Baker if he did not agree with him, but Mr. Baker would not admit it. Then, said Mr. Kephart, suppose your white water was so thick that it would clog the showers? Mr. Baker agreed that this would be bad, but gave no remedy. A member suggested widening the orifices of the showers.

The Use of Save-Alls—The argument on this point centered about the question of putting the white water through a save-all. Mr. Baker said he did not want the impression to go out that save-alls were not useful, but it was quite feasible to use white water direct as a shower on some grades of paper.

Mr. Kephart asked as to the best method of overcoming froth on the machine and Mr. Baker said he did not know, except that many of the difficulties encountered in the reuse of white water on showers could be overcome by the use of chlorine.

Tom Harvey said that in his mill white water was not put through a save-all except where the water was to be sent to the sewer. This was the only time that save-alls were used.

W. H. Sievert had found that white water was objectionable in making liners and did not use it, but others, including Tom Harvey, said they had experienced no difficulty of this kind.

Factors in Use of Closed Systems—Harry Williamson said that an attempt had been made in a newsprint mill he had been connected with to use a closed white water system on a fourdrinier machine, even to the extent of taking out all the save-all trays, but it was found that the wire became ridged by stock accumulating on the wire and rolls. Later the same thing was tried on a kraft pulp with identical results. Mr. Williamson said that the success of a closed white water system depended to a great extent on the mesh of the wire, the kind of pulp used, the presence of fillers, and the grade of paper made.

As the hour of adjournment for the boat trip on the Delaware river was approaching, one of the papers to be presented at the morning sitting ("P's & Q's for the Papermaker," by Dr. Vail) was deferred to the first sitting on the following morning. Before adjourning President Ramsey announced the presence in the hall of "Chief Wa Wa Seeka" of the Menominee Indian Tribe, otherwise known as Fred C. Boyce, who came forward and greeted the gathering. He said that he had intended to fly to Philadelphia but weather conditions prevented him doing so. He was received with great applause.

Jesse H. Neal, general manager of the American Paper and Pulp Association, was then introduced and made a brief but witty speech in acknowledgment. He said he had listened with great interest to the discussion on the reuse of white water and the trouble with froth and foam. As to froth he had observed in prevolstead days that the application of a little grease near the rim of the pail would keep down froth or foam.

An Enjoyable Excursion on the Delaware River

The morning sitting was then adjourned and at 11:20 o'clock the party boarded busses at the hotel door which took them to Chestnut Street wharf on the river front where one of the Wilson Line steamers, the State of Delaware, was waiting to take them on a trip down the historic Delaware river to Carney's Point, N. J., for a tour of inspection of E. I. du Pont de Nemours & Company's dye works and experimental laboratories. It was planned on leaving Carney's Point to make a stop at Wilmington for a visit to the great paper mill machinery plant of the Pusey & Jones Corporation, but time did not permit of this. On the way down to Carney's Point, the steamer encountered head winds and an adverse tide which made the trip last longer than was expected, but every moment of the time was heartily enjoyed in various ways by all on board. On arrival at Carney's Point, the party was taken in automobiles for a tour of the extensive grounds of the Dyestuffs Division of E. I du Pont de Nemours & Co., but only a few of the visitors had any opportunity to go through the paper dyeing laboratory. The return trip began at 4 o'clock in the afternoon, headquarters at the Benjamin Franklin Hotel in Philadelphia being reached at 6:45 P.M., allowing scant time to prepare for the banquet which was scheduled for half past seven that evening.

The river trip was greatly enjoyed by an appreciative and happy crowd of members and guests of the association which included women and children. An excellent luncheon was provided and there was never a dull moment on board. A dance orchestra furnished music and those who did not dance found games of chance and mechanical contrivances in plenty to entertain them. In addition to the dance orchestra, special concerts of both classical and popular selections were rendered by a powerful electrically operated orthophonic device which simulated the music one gets over the radio.

All who cared to try their luck at games of chance were handed large envelopes filled with slips of paper representing sums ranging from $1,000 to $25,000, the imitation money changing hands according to the skill displayed at card games, dice throwing and other lotteries. The person who won the largest amount was awarded a prize. The section of the boat where the games were played was called Monte Carlo. David M. Kelly, of Bloomer Brothers Company, Newark, N. Y., won the first prize on account of amassing $1,250,000 and received a Telechron clock. First ladies' prize went to Mrs. M. P. Northam, an electric egg cooker. The other prizes were distributed as follows: 2d gentleman's, a vacuum cleaner, to H. A. Horstmann, Brooklyn, N. Y.; 2d ladies', a curling iron, Mrs. J. A. Inge, Richmond, Va.; 3d gentleman's, a six-inch electric fan, to David Pillar, William Cabble Excelsior Wire Manufacturing Company, Brooklyn, N. Y. Other prize winners were Mrs. F. C. Farnsworth, A. B. Drew, Mrs. J. A. Cameron, W. F. Firdick, Mrs. K. E. Terry, Edward P. Argy, Mrs. Thomas H. Ireland, S. Carroll Wentz. The prizes were donated by the General Electric Company under the direction of their Philadelphia representative, Frank P. Winslow, who was a very popular member of the Committee on Program and Entertainment.

FRIDAY MORNING'S SITTING

Election of Officers

Apart from the papers and discussions at the opening sitting on Friday morning, which opened an hour after the advertised time, the chief business transacted was the election of officers to serve during the ensuing year. A nominating committee composed of Messrs. Boyce, Rooney, Terry, Kelly and White presented a report placing in nomination for president, Carl Magnus, Richmond, Va.; and for vice-presidents, Roy H. Kelly, Rothschild, Wis.; William H. Brydges, Big Island, Va.; J. Bertwell White, Yorklyn, Del.; Ernest W. Bush, Holyoke, Mass., and H. T. Randall, Hamilton, Ohio; trustee for three years, Fred J. Rooney, Lockport, N. Y.

On motion of John A. Bowers, duly seconded, the secretary was instructed to cast an affirmative ballot for the names presented and the election was declared unanimous. Robert L. Eminger continues as secretary, having been elected for a three-year term at the preceding annual meeting.

Movie Film of Leather Manufacture

The proceedings were opened with a remarkably interesting motion picture exhibition of the manufacture of leather for the production of Vim belting, the story being told by Wayne Davies, of the engineering staff of E. F. Houghton & Co. Every detail from the collection, preservation and shipping of the hides from France was shown in animated films of great clearness and beauty. The hides of cattle grown in France near the borders of Switzerland are preferred for leather belting of the superior kind for the reason that they are larger and heavier than those of American cattle which are killed at an earlier age. The Frenchman appears to like his steaks tough, and for this or some other reason the cattle are allowed to live longer, thus permitting their hides to grow and mature to a greater extent than is the case with the cattle on our western plains. The treatment of the hides on their arrival at the plant of E. F. Houghton & Co., in Philadelphia, boiling, washing, oiling and trimming, was demonstrated in an interesting way and the lecture, for such it was, was of an educational character that left a profound impression on the assembled superintendents and visitors.

President Ramsey, who was in the chair, extended the thanks of the association to Mr. Davies for his interesting demonstration of how Vim leather is made.

P's and Q's for the Papermaker

The next item on the program was a paper entitled "P's and Q's for the Papermaker," by James G. Vail, of the Philadelphia Quartz Company, which had been put over from the opening sitting on Thursday. Mr. Vail gave an entertaining account of the origin of the expression "Mind your P's and Q's." One explanation had to do with the custom in early English ale houses of chalking up on a blackboard the number of pints and quarts of ale consumed by customers. When in danger of exceeding their limit they were told to mind their P's and Q's. The correct explanation perhaps went farther back in history, according to Mr. Vail, who said that in the old days of the French regime when courtiers

wore wigs and swords, trouble was often experienced with swords catching in their feet and their wigs becoming awry, so that the court chamberlain often found it necessary to caution the gentlemen to mind their pieds and queues.

Silicates and Papermaking

The uses of silicate of soda in the pulp and paper industry were interestingly set forth by Mr. Vail. Silicate of soda was described by him as one of many useful tools which in the hands of skilled papermakers would constantly yield improvement in quality and economies. No general rule for its use could be prescribed, as every mill has a different set of conditions, even where the same grade of paper is being made, so that the introduction of silicate of soda would necessarily require demonstration and experiment to adapt it in each particular case.

It was pointed out by Mr. Vail that there are many kinds of silicate solutions known as "silicates of soda," there being at least 20 distinct and different kinds on the market, not 20 manufactured brands more or less alike, but twenty different materials, each adapted to a specific use with chemical and physical properties standardized and controlled. The "S" brand silicate is used in sizing paper. From a chemical point of view silicate of soda is closely related to rosin size, being the sodium salt of a weak acid which contains more or less colloidal material according to circumstances. It reacts with alum to form a flocculent precipitate which is readily entrained in the pulp and materially affects the properties of the paper. The silicate often makes the rosin size more effective because the increased density of the sheet favors the retention of the rosin and thus heightens its effect.

Speaking of the amounts of alum required to precipitate silicate, he said that these differ with different silicates and are affected by the character of the water and the pulp. The best measure of the right amount of alum to use is the pH of the stock in the beater after the alum has been added to precipitate the silicate and the beater run long enough to secure thorough admixture. At this point he remarked that while the pH scale could be explained in very difficult technical language, it was really a simple means of expressing the relative acidity or alkalinity of the solution by a series of numbers from 1 to 14, in which 7 represents the neutral point, numbers less than this being acid and numbers higher than 7 representing alkaline conditions. The best pH for precipitation of silicate was said to be 4.5. The pH is measured with sufficient accuracy by the use of color comparator sets in which the change of color of a suitable dyestuff, such as bromcresol green, in the water to be tested, is compared with a standard. It usually requires about twenty-five pounds of 18 per cent alum to precipitate 100 lb. of "S" brand silicate and bring the pH to 4.5 silicates containing more alkali require correspondingly more alum.

Silicate of soda is used largely as an adhesive in the manufacture of corrugated paper, solid laminated fiber for shipping containers and many varieties of wallboard. It is also a convenient adhesive for capping rolls, and we have seen it employed for repairing breaks on certain papers in rewinding.

The use of silicate in connection with starch as a sizing agent was touched upon. The proper procedure is to dilute the silicate, mix the starch into the silicate solution and raise the temperature to a litle over 160 deg. fahr. when the starch swells.

There was no discussion of Mr. Vail's paper and W. R. Crute, engineer, The Champion Fibre Company, was called upon to present his paper on "Heat and Power Problems with High Pressure Steam in Pulp and Paper Mills."

High Pressure Steam in Paper Mills

Mr. Crute pointed out how by the intelligent use of high pressure steam, fewer heat units need be allowed to escape to the sewer. He defined high-pressure plants as those employing a pressure of 400 pounds or higher. There are at least seventy industrial plants in the United States and Canada in this class; 141 are using steam pressures of 300 pounds or over, and a boiler plant is now under construction to operate at 1,800 pounds pressure.

Mr. Crute gave a most informing account of developments in the application of high-pressure in the paper industry. He said that the designers of the newer boiler plants have gone almost universally to larger boilers intended to operate at high ratings. This was done to reduce the amount of capital invested and was made possible largely by the use of water-cooled furnaces which permitted higher furnace temperatures without excessive furnace maintenance costs.

The steam accumulator was coming into more general use, he said. By storing up the excess steam generated during low load periods in an accumulator, the high peaks could be topped off during the heavy load period without disturbing the efficient operating load on boilers. The steam accumulator was better adapted to a small plant having two digesters than in the larger plant with a diversified steam demand.

Mr. Crute discussed several points of vital interest in connection with the use of high-pressure steam as a means of solving some of the heat and power problems in pulp and paper mills and his paper proved a timely contribution to an important subject.

CARL MAGNUS

President, American Pulp and Paper Mill Superintendents Association

After graduating from the University of Maine as a chemical engineer, Mr. Magnus obtained his first practical pulp and paper experience with Dill & Collins Co., Philadelphia; spent two years in South America developing the use of cotton linters and cane fibers, and was probably the first to commercially produce paper from the fibers of sugar cane and grass; was instructor in pulp and paper at the University of Maine; consultant at Eastern Mfg. Co., and two years as general superintendent coarse mills division, American Writing Paper Co. He has been for ten years in his present connection with the Standard Paper Mfg. Co. in charge of plant No. 3, and has built and installed a model, semi-commercial paper mill in which pioneering work on bleached sugar cane, raw materials for rayon, application of rubber and asphalt emulsions to paper have been worked up and put on a production basis. He also engineered and installed a model new paper mill for the company during the past year for the production of high grade, offset bond and specialties.

Work of the Mill Service Committee

The Mill Service Committee, Killey E. Terry, chairman, was then asked to report. Mr. Terry said that the second serial report of his committee had been distributed to members just prior to the convention and he assumed that all were familiar with it. He reviewed the report briefly and said the Committee was not altogether pleased with the results of their work. The committee had not succeeded in getting the aim and object of the committee's work properly before the members. He quoted from the first reports of the committee to give an idea of the committee's activities. The fundamental thought underlying the work of the committee was, he said, to render a useful direct service to members and especially to those members who do not care or cannot maintain regular attendance at the national and divisional meetings. He asked members of the association to contribute statements giving accounts of new machinery and equipment improvement which would be compiled and sent out to members annually.

The character of the statements solicited from members was indicated by an extract from the first report of the committee which was read by Mr. Terry as follows:

Character of Statements Required—"The Statement should embody a record of new machinery and equipment improvement that have come under personal observation during the past year; installations of new machinery, devices and instruments, with their application in the mill or department under the reporter's supervision; to give names of manufacturers; state the advantages of the machines, and frankly discuss any difficulties experienced, with discussion of processes or parts of processes of general practice or knowledge in which improvement has been made. Reports before submission to the association must be referred to mill manager for signed approval.

"Equipment manufacturers are asked to render statements pertaining to improvements and new equipment developed during the year."

R. R. Baker, engineer, Westinghouse Electric and Manufacturing Company, was called upon at this point to present his paper on "A New Speed Regulator for Section Paper Machine Drive."

Section Speed Regulators on Paper Machines

Improved paper machine operation was attributed by Mr. Baker to the operation of a device to control the speed of the section motors of an electrically driven paper machine.

As stated by Mr. Baker, the problem of developing new equipment to regulate the speed of motors and maintain uniform draw between sections, was a most interesting one. The device must be one of extreme accuracy and sensitiveness. While capable of maintaining uniform speed on the section motors during normal operation, it must also be capable of responding instantly to sudden demand on the section motor for the development of large amounts of energy.

An extensive and careful study of this problem has resulted in the development by the Westinghouse Company of a carbon pile type quick response speed regulator provided with field forcing and anti-hunting means which is extremely simple in both its construction and operation. These quick response and anti-hunting features together with the use of a carbon pile type of resistor, which are all so essential to the best performance of the paper machine drive, are said to represent entirely new developments in connection with differential speed regulation.

The carbon pile regulating device includes two major parts, the differential and the control element. These two elements are assembled together and mounted on or near the section motor which they control. The speed differential includes a small fractional hp. synchronous motor, a cone pulley and a differential mechanism consisting of a screw and nut and lever system. The synchronous motor has a double extended hollow shaft. One extension supports the cone pulley and the other the differential assembly. The entire equipment is mounted on ball bearings and the differential parts are totally enclosed and operate in a bath of oil. All parts are accurately machined and the clearances held within such limits as practically to eliminate all back lash or lost motion.

Mr. Baker followed with further intimate details of the mechanism and described the operation of the control and its anti-hunting feature. He said that this type of regulator had been in continuous operation for a year on the dryer section of a 232-inch news machine operating above 1,100 ft. a minute. He added that a 240-inch kraft machine having a speed range of 100 to 850 ft. a minute, with a total of seven sections equipped with carbon pile speed regulators, was started up and placed in commercial operation several weeks ago.

There was no discussion of Mr. Baker's paper. Following it, Secretary Eminger presented a report in which he enumerated accessions to memberships since the meeting in Wausau last year. He compared the membership by divisions and showed that 88 new members had been added to the list. The Penna.-New Jersey division showed the greatest increase during the year, 14 new members having been added. The Southern Division showed up well with 10 new members, and the Northwestern Division had 9 new members to its credit. No recessions were reported, though 13 members had been dropped for non-payment of dues. The total number of new members added during the year was 114. The application of 20 candidates for membership at this meeting had been approved and total membership of the association was stated as 670.

Mr. Eminger made a strong appeal to the members to encourage advertising in the year book of the association. He said that many of the advertisements were keyed and when a member wrote to an advertiser he should thank the firm for the support given to the association. He acknowledged the support which he had received from officers and committees and gave thanks for co-operation "to L. D. Post, his staff, and the staffs of other trade papers."

President Ramsey took occasion at this point to call attention to the offer of L. D. Post to award a Hamilton split-second watch to the man who in the judgment of the executive committee had done most for the association during the past year. At a later session the watch was awarded to Retiring President Ramsey.

Before adjourning the morning sitting, a report was received from the Auditing Committee, Tom Harvey, chairman. Mr. Harvey said that the members should be complimented on the businesslike manner in which the affairs of the association had been conducted. The report of the commercial auditors had been scrutinized by the committee and found satisfactory.

Divisional Meetings

A series of divisional meetings were held in the afternoon on Friday. Four meetings took place simultaneously in different rooms on the mezzanine floor of the hotel. A joint meeting of the Sulphite Pulp and Mechanical Pulp Committee was featured by a motion picture exhibition depicting "The Age of Speed" in which modern methods were contrasted with ancient methods in a way that was altogether fascinating. In contrast with early methods of locomotion, airplanes were seen in swift flight, modern steamships were contrasted with early sailing vessels, and so on through a wide range of subjects in which the industries were represented. All this led up to a talk on the Norton Pulpstone by P. F. Luckham, of The Norton Company, Worcester, Mass.

Artificial Pulpstones

P. Luckham's paper constituted a most complete and interesting account of the manufacture, assembly and operation of the Norton artificial grindstones for the manufacture of groundwood pulp. When the Norton Company first engaged in the manufacture of pulpstones, little information was available concerning paper mill practice, so it was necessary to make a study of groundwood, both on the blue grass and microscopically, in order to arrive at a decision as to what constituted good and poor stock. It was made evident that a stone must have certain definite properties. It was found that the production of long, thin fiber suitable for news must be brought about by rubbing the individual fibers from the log rather than by cutting them off, which meant a consideration of the angularity of the abrasive particles, as well as the bond of the stone.

Details were given of the tests conducted with experimental grinders before a satisfactory composition of stone was developed. This composition consists of silicon carbide bonded with a vitrified bond and Crystolon is the trade name of the material. The various steps in the manufacture of crystolon abrasive from silica sand and metallurgical coke were described, as well as the screening for the separation of the abrasive grain into various sizes. Pulpstones of this material cannot be produced large enough to be used as a solid piece in a grinder, so the Norton artificial stones are composed of segments bolted on to a drum or core, the space between the segments being filled with metal alloy that wears down at the same rate as the stone.

Two types of stones are made by the Norton Company, one is the metal drum centered stone and the other a cement centered stone.

A striking feature of the pulp produced from a Norton pulpstone is said to be its uniformity which is believed to be a result of the long period that intervenes between burring, some two to five days as contrasted with eight hours in the case of a natural stone. Among the advantages claimed for Norton pulpstones are long life of stone and high production of pulp of satisfactory quality. It is true that the stone has a high initial cost which is, however, offset by its longer life.

W. H. Sievert, of the Michigan Carton Company, Battle Creek, chairman of the Mechanical Pulp Division, who presided, thanked Mr. Luckham for the interesting series of pictures which he presented as well as for his talk on the manufacture of artificial pulpstones. He then called upon Dr. J. Campbell, director of the Bureau of Tests of the International Paper Company to present his paper entitled "Classifying of Groundwood Stock into Its Different Fiber Lengths."

Determining Stock Quality by Fractional Screening

A method of determining the quality of groundwood stock by classification of fiber lengths through a system of fractional screening formed the subject of Doctor Campbell's paper which was illustrated by photographs of apparatus and photomicrographs of stock retained on screens of different meshes. He exhibited and passed around among the audience a set of tall narrow glass bottles containing the different fibers in suspension, ranging from stock retained on .007 inch screen; 20-mesh screen; 30-mesh screen; 50-mesh screen; 90-mesh screen, and 200-mesh screen.

The full text of Doctor Campbell's paper and illustrations appears on another page in this issue.

Experience with Norton Stones

In the discussion which followed, Doctor Campbell said his fractional screening method was not designed to act as a freeness tester. Questions were brought up concerning results obtained with the Norton stones in grinding wood. B. W. Haddock, of the Escanaba Paper Company, spoke of the excellent quality of pulp obtained from a Norton stone when it was shaped properly at the start of operations. As to the comparative life of a Norton stone and a sandstone, a sandstone lasted only three months, whereas a Norton stone had been running at Escanaba for five years. In reply to an inquiry, R. G. Macdonald, of the Technical Association, said that the price of a Norton stone was $2,000, as compared with $250 for an Empire sandstone, and $500 for another make.

In line with the previous discussion, M. J. Argy, of the Cliff Paper Company, Niagara Falls, N. Y., was called upon to give his "Reminiscences of a Groundwood Superintendent".

Reminiscences of a Groundwood Man

Mr. Argy's recollections of experiences in various groundwood mills had an interesting historical flavor. The method of sharpening pulpstones, before the advent of hydraulic grinders, was to take them out of the grinders and then chip grooves in them, very much in the same way as mill stones were sharpened for grinding corn, wheat, etc. The first real improvement in the grinding of pulp came with the invention of the hydraulic grinder by Warren Curtis, Sr. He recollected seeing the hydraulic grinders in operation at the Montague mill in Turners Falls, Mass. The pulp was ground very thin and washed from the stone with large quantities of water. A considerable proportion of cotton waste and rags were used instead of sulphite at that time, else the paper made from the thin groundwood would have been too hard and brittle for good printing. A man from Rochester, N. Y., employed a method of grinding by miring the stone in the grinder pit which heated the pulp to a high temperature and increased the production. This was the first knowledge available of a method of increasing production by thickening the pulp and increasing the temperature. The stone was sharpened by a lathe on the back of the grinder, operated with a hand screw, which served to keep the stone free from ruts. The method used before this, as well as for a long time afterwards, was to install a burr on a long lever with a fulcrum close to the stone. The burr would be pressed against the face of the stone by the weight of a man sitting on the end of the lever. After this treatment the stone looked like a washboard, being ridgy and full of ruts.

Mr. Argy spoke of the different ideas entertained by different men as to the best kind of burr to use for sharpening a stone. Some liked a diamond-cut burr, others a straight chisel tooth burr and some preferred a diagonal burr, with from 1 to 2 inch lead. There was no agreement about the number of cuts per inch; some men used 6 cuts to the inch, and others up to 14, with about the same results. On the Voith grinders in use at the Cliff mill in Niagara Falls, a No. 2 straight-cut chisel tooth burr is used, followed by a No. 12 diamond-point burr to get a fine cutting surface. The No. 2 burr was used to crease the stone, the pulp ground by the fine points on the stone falling into the creases, thus saving the pulp from being reground as the stone turned over in the wood.

Mr. Argy described a trip which he had made to the Voith plant at Heidenheim, Germany, where the first pulp grinder invented by Voelter was manufactured. Voelter's original idea was to use the groundwood for conversion into chairs, tables and other pressed articles. The first pulp made by him was produced on an ordinary grindstone, power driven, the blocks of wood being held against the stone by hand.

According to Mr. Argy, the best results in grinding wood for pulp are obtained by thickening the pulp so as to maintain a temperature of about 160 to 180 deg. fahr. at the grinder pit. He told of the troubles experienced with stones breaking after the Voith magazine grinders had been installed at the Cliff mill. The stones are 52-inch face and 67-inch in diameter, and run at a speed of 214 r.p.m. During the first ten years of operation the average cost per stone was $700 and the annual stone cost per ton of paper 12½c. The cost of stones has risen since that time and he estimated that the stone cost per ton of paper was now about 25c.

The use of white water instead of fresh water on the stones was regarded as a great improvement and better pulp was now obtained with less sharpening. He thought this might be attributed to the fact that the white water was warmer than fresh water. He was of opinion that cold water striking the fine points made by the burr on the stone caused them to explode, thereby dulling them. The original trouble from the cracking of the stone was likely caused by the application of cold water to the heated surface of the stone. At the Cliff mill the system is a closed one and all that it is possible to get out of a cord of wood is obtained. He said there wasn't a sliver or a stick of any kind rejected from the groundwood mill. The coarse blocks and fine feathery slivers taken out by the bull screen are rammed by a stick into the magazine grinder so that all coarse materials are taken care of in this way. The tailings from the rotary screen are dropped by gravity to a Voith refiner operated by a motor with a power consumption of 25 to 30 hp.

Mr. Argy believes that some modified form of drum barker will be the grinder of the future, the wood being chemically treated and heated to make it soft before being run to a rod mill or some similar machine, equipped perhaps with carborundum rollers, in which the friction of the rods and the wood would effect defibering.

Of Interest to Sulphite Superintendents

Two papers were presented by the sulphite group, one

by J. D. Miller on the subject of ferrous alloys and another on the chemipulp process by A. D. Merrill.

Sulphite-Resistant Alloys

Since the committee report presented by Mr. Miller before the Technical Association at Richmond, Va., last September, experiments had been conducted at the three testing stations of the committee where fifty-six alloys have been examined to date. He presented data from one station. Twenty-six samples submitted by the research departments of the non-ferrous alloy manufacturers had been tested. They were all of the high copper base type. It was found that satisfactory loss could be obtained by 200 to 250 digester-hours exposure. A surprising uniformity of results was obtained. The inch penetration per year was from .02 to .05. With the standard test samples which are exposed on the six faces to attack, this corresponds to a loss in weight of 2 per cent to 5 per cent.

In the ferrous-alloy field, it was necessary to modify the test. The time of exposure was increased to 400 to 450 digestor-hours, the limit being due to the press of other samples for the corrosion chamber in which the alloys are tested.

After noting an interesting series of alloys, consisting of 18-8 (chromium-nickel); 18-8 heat treated; 18% Cr.; 12% Cr.; 18-8 with 3% Si., and 18-8 with 3% Molybdenum, Mr. Miller stated that, with the exception of the 18% Cr. and 12% Cr., no loss was observed when all were exposed 413 digester-hours. The most resistant of the alloys, until the chromium is increased to 25 per cent, is 18-8. The results pointed to the desirability of purchasing alloys by analysis, so that each mill will have as complete a record of corrosion experience as possible. The 18-8 alloy is regarded as a satisfactory material and efforts are now in the direction of developing an alloy of perhaps less resistance but improved working properties.

Results with the Chemical Process

Operating results obtained by the chemipulp process were described by Mr. Merrill. By this process relief gases and liquors are recovered from sulphite digesters without preliminary cooling, an acid accumulator being interposed between the acid storage tanks and the digesters. The relief liquors and gases are passed into the acid accumulator from the bottom where they are combined with the acid contained in the pressure vessel or acid accumulator. The comparative results exhibited by Mr. Merrill were favorable to the process and the strength of pulp was higher and more uniform than that produced by the standard process. Savings in steam and sulphur, as well as limestone were reported. The wood is more completely cooked if we are to judge by the reported average saving in screenings, which was put at nearly 40 per cent. Other savings effected included a reduction of cooking time by as much as two hours.

Sulphate and Soda Pulp Papers

R. J. Sprang, of the Champion Fibre Company, presided at the meeting of the Sulphate and Soda Pulp divisional meetings which were held in common in the Franklin Room.

The first paper bearing the title "Reclaiming Lime from Caustic Sludge" was presented by the author, G. M. Trostel.

Reclaiming Lime from Soda Sludge

He gave a brief historical review of the practice of reclaiming lime from sludge, confined originally to alkali plants. Pulp manufacturers became interested and a few of the old soda and sulphate mills have put in burners for lime. Lime reclaimers is now standard equipment of new soda and sulphate mills. He described the properties of the sludge as received from the causticizing tanks of soda mills. The sludge consists of 85 to 90 per cent of calcium carbonate and 5 to 10 per cent of calcium oxide, or caustic lime, together with impurities in the form of silica, iron and aluminum compounds, as well as vegetable carbon carried from the smelter.

Removal of Impurities—Mr. Trostel said that impurities could be removed by passing the green liquor through a Dorr thickener having sufficient capacity for settling. Control of the causticizing operation is effected by a preliminary test of the green liquor in order to determine the amount of sodium carbonate present. From this the amount of lime necessary to effect hydration is computed. In reburning the lime, it is important to first remove the soda salts or caustic liquor from the sludge by washing and decantation. The lime kiln or burner should be supplied with a steady feed of carbonate sludge of uniform moisture content. Natural gas, producer gas, or fuel oil is used in the burning of lime in rotary kilns. The best results are obtained with natural gas. The temperature necessary for burning lime is 900 to 1,200 deg. Cent. or 1,650 to 2,190 deg. Fahr. The mass should be heated at this range of temperature for a period long enough to burn the lime completely, but care should be taken not to overheat, as this results in fusing the lime which keeps it from slaking.

Problems in High Pressure Steam Generation

Alfred L. Webre gave an informal presentation of the problems involved in the use of heat for power generation, evaporation and heating. He exhibited a number of drawings and charts to illustrate his subject and quoted extensively from an editorial in an engineering journal bearing on refinements in power generation. Many modern industrial power plants have incorporated refinements in power generation equal to those found in large central stations. The most economical conditions for industrial power plants are those in which the steam and power demands coincide and balance, though these conditions seldom obtain.

Reading from the editorial, Mr. Webre said that it was quite possible to balance steam and power loads to the neglect of other factors. The size of an industrial plant had much to do with its ability to generate its own power economically. Again, changed conditions of fuel supply might shift the economic balance between purchased and locally generated power. Natural gas was an example of this. This desirable fuel is now available to many industrials that heretofore could obtain fuel only of an inferior quality or at high cost.

The economies possible from using high-pressure steam were touched upon. Better economy resulted when steam is generated at comparatively high pressure and delivered to process after it has first been used for the generation of power. In some industries where the process steam requirements are large in comparison with the steam demand for power, it frequently happens that steam is generated without regard to by-product power possibilities and the savings that could be effected. This it was pointed out, represents waste.

The next paper on the program was one by Dr. C. L. Knowles, of the Dorr Company, on sulphate and soda recausticizing. In his absence the paper was read by Mr. Sheffield.

Recausticizing Plants for Soda and Sulphate Mills

The paper by C. L. Knowles, manager of the chemical division of the Dorr Company, New York, represented an exhaustive study of plant design factors in soda and sulphate mills with respect to the recausticizing of soda and reburning of lime. By means of pictures thrown on a screen the general layouts of complete recausticizing plants were shown and every stage of the operation explained. The layouts represented approved designs of continuous recausticizing plants for the solution of chemical reclaiming problems frequently encountered in the manufacture of chemical pulp.

Dr. Knowles made mention of the confusion which prevails in the terms used in different pulp mills. The terms causticity, sulphidity, recovery, etc., have different meanings in different mills and efforts are now being made to codify them and secure the adoption of standard definitions.

The author instanced nine terms, as Total Alkali, Active Alkali, Causticity, Activity, Sulphidity, Reduction, Chemical Consumption, Chemical Recovery and Chemical Loss, and gave definitions that have been adopted by himself and associates for them.

Book and Fine Paper Division

Carl Magnus presided at the meeting of the Book and Fine Paper Division until he was relieved by Harry William-

son who took charge of the round-table discussion or Question Box. John J. Sullivan, of Proctor & Schwartz Company, was down on the program for a paper entitled "New Device for Drying Fine Bond Paper." In his absence the paper was read by A. O. Hurxthal, vice-president of the company.

New Type of Dryer for Fine Papers

The paper by Mr. Sullivan described a dryer for the resizing and drying of writing papers which is manufactured by the firm of Proctor & Schwartz, Inc., Philadelphia, and he gave a cordial invitation to all present to visit the local plant, where a full-size machine threaded with a continuous sheet of paper afforded a mechanical demonstration of the working of the dryer. The dryer is of the festoon type, but differs from those in use in two main respects. The dryer is compact in form, its main body being not over 10 ft. high and less than 25 ft. long. It has been designed to handle papers up to about 48 in. in width.

The width of the dryer over all is about 9 ft., but the holding capacity represents about 400 linear ft. of paper. The drying is done by means of heated air which is recirculated. When a festoon is formed between the carrying rolls, a small tube or floating roll is dropped into the festoon at the beginning of its formation. The main carrying rolls are tubes or small rolls which rotate in moving through the dryer, causing the paper to travel slowly over them. A light tension is maintained on the continuous sheet of paper by the floating roll and this prevents buckling or wrinkling of the paper.

In reply to questions following the presentation of Mr. Sullivan's paper, Mr. Hurxthal stated that for every pound of water evaporated from the sheet, by the dryer, two-and-a-half pounds of steam was required. The moisture content of the sheet as it entered the dryer ranged from 17 to 30 per cent. The Mullen test of the dried sheet showed an increase of two points over similar papers dried by the pole method. This gain was attributed by Mr. Hurxthal to greater uniformity of drying. He said that two of the dryers were now in use at the Berlin, N. H., mill of the Brown Company. The price of the equipment was approximately $11,000.

Overhead Carrier System

E. T. Bennington, of the Cleveland Tramrail Company, was asked at this point to describe the materials handling systems developed by his company and he did so, illustrating an informing talk by means of a projectoscope which showed photographs of actual installations in paper mills. The system provides for the handling of both finished and raw materials in larger units at a lower labor cost than with the ordinary systems in use. The system is an overhead carrier arrangement which travels at a high rate of speed. One series of pictures showed paper stock taken from the cars, three bales at a time, weighed and stored, and later delivered direct to the beater, with one man doing the work of seven.

The K. & N. Opacity Tester

The next paper on "Opacity and Transparency of Papers", by William M. Nash, of the Seaman Paper Company, Chicago, dealt with a new electrical instrument for measuring the opacity and transparency of paper. Mr. Nash also exhibited and demonstrated an apparatus for determining ink penetration, designed to solve the problem of providing paper to suit the ink used by the printer.

Definition of Opacity—Mr. Nash described opacity as the quality of a substance which rendered it impervious to the rays of light, and transparency as that state or property in a substance which permits rays of light to pass through it so that distinct images of objects beyond could be seen. Both definitions depended, he said, upon the physical eye for interpretation, just as sound depends upon the physical ear, but in the case of opacity and transparency light also was an influencing factor. Without the rays of light and in the absence of the physical eye there was neither opacity nor transparency.

Regarding means and methods of determining the character of transparency and opacity, mention was made of the Bureau of Standards tester, the Photometer and the K. & N. Opacity and Transparency Tester which was the subject of his paper. The K. & N. tester was designed, he said, to give a fixed value of light, as it had an electric eye and a brain in the form of an electric circuit reflected upon a meter in a standard unit so as to replace individual interpretation.

The invention was developed through the combined efforts of Mr. Nash and his associate, Arnold Kinkaid. It comprises a fixed source of light at a fixed intensity and provides for the focusing of the transmitted light to a light-sensitive electric cell and suitably amplifying the current passing through the electric cell to give an intelligible reading upon a meter connected in the amplifier circuit.

Registers Color Effects—Mr. Nash said that the instrument discriminates between values so that it was possible to distinguish between the slightest manufacturing changes that might occur in the production of grades of paper. The tester also registers the effect of using certain colorings to increase opacity values. Mr. Nash stressed the elimination by the instrument of the factor of human error.

Small Samples of Paper Used—Although not recommended, it was said to be possible for an inexperienced person to operate the instrument and determine the exact value of opacity or transparency of papers, whereas heretofore only the most experienced have been able to classify these terms with great difficulty. Large specimens of paper are not required in making the test, those used being the size approximately of an ordinary margin on a book.

An Ink Penetration Tester—Mr. Nash discussed ink absorption as related to printers' inks and he exhibited a penetration tester invented by Ronald Drake, of the W. F. Hall Printing Company. The sizing values of paper in relation to printing penetration is not indicated by flotation tests or similar tests where water is employed as the testing medium, because printers' inks are composed of pigments ground in an oil vehicle. The Drake penetration tester is composed of a cylinder of a fixed dimension suspended upon an axle with a rod extending into the cylinder. At one end of the cylinder, a hole is bored of a given diameter and there is a clamping device which holds the paper in place. The rod extending into the cylinder is the indicator for a specific oil lever, the cylinder being filled with oil up to the rod and maintained at this level for all tests. The absorption of the ink by the paper is determined by the time consumed in the strike-through of the oil at any point in the surface. If the paper specimen contains pin holes the strike-through test will take less time, thus decreasing the ink penetration which is reflected indirectly upon the opacity value of the sheet. It was represented that the ink penetration tester when used in conjunction with the K. & N. opacity tester would serve as a guide in the manufacture of papers for opacity, transparency and sizing.

Factors in Ink Penetration—An interesting discussion followed. J. C. Schmidt, of E. I. du Pont de Nemours & Co., asserted that opacity and transparency were affected by the dyes used in tinting papers and it was important to tint both fiber and clay uniformly to get good results. He averred that newsprint was more transparent thirty minutes after printing than it was months later after the ink had dried, an assertion that was disputed by Ronald Drake, the inventor of the penetration tester already described. He said that the formation of the sheet determined ink penetration. The formation of the sheet and ink resistance were measured by his apparatus. Mr. Schmidt said that the papermaker was often blamed when the fault lay with the printer in using the wrong kind of ink or carelessness in the makeready work.

Numerical Values Registered—After Mr. Schmidt had pointed out that light reflection varied with different shades of color, Mr. Nash said his tester registered the changes in opacity caused by different colors.

Homer E. Stafford mentioned some disappointing experiences he had had with an instrument of German origin and both he and Harry Williamson said they were impressed with the K. & N. machine, particularly on account of the ability to obtain a numerical value of opacity with it.

Harry Williamson Leads Question Box Discussion

Carl Magnus at this point resigned the chair to Harry Williamson who conducted a Question Box discussion in accordance with the program of the division. Unfortunately there were no stated subjects for discussion and the debate ranged through white water reuse, experience with centrifiners, the drying of paper and rosin sizing. Mr. Williamson started off by quoting a statement made by Engineer Baker at the opening sitting of the general association, in which a mill manager who had for three weeks returned all white water to the machines was met with complaints by the operators that difficulties were being encountered by the use of too much white water. Unknown to the operators the system was changed and nothing but fresh water used on the machines. The following week on his routine visits the manager got the same complaint about using too much white water. Mr. Williamson expressed some doubt as to whether experienced operators would be unable to detect the change. Nevertheless he thought the complaints might have been justified on account of organic residues, particularly "organic chloride", being left in the pipes.

Experience with Centrifiners

Homer E. Stafford inquired if anyone present had had any experience with centrifiners, either Tolhurst, Bird or Erkens, and William A. Marrs, of the National Vulcanized Fibre Company, stated that his firm had three of the machines in use. They worked to advantage so far as the removal of sand, iron and metallic matter generally were concerned but failed to extract light particles of rubber.

A discussion ensued as to the value of the Voith stock inlet on heavy sheet papers. George Hively, of the Champion Fibre Company, said he had had excellent results with the Voith inlet in making government postcard stock. In making government writing he had found that the tensile strength was low with a Voith inlet and he remedied this by putting the old slice ahead of the Voith. He said he had been playing back and forth with the Voith and the old slice for a long time and found the Voith generally better.

Mr. Hively inquired if there was any means of cleaning white paper for reuse as he had found that its use entailed more dirt. While there was a saving of 750,000 gallons of water a day, there was an addition to the speck count amounting to 15 to 20 per cent. Mr. Williamson asked if anyone in the meeting had had experience in clarifying white water. He inquired of Mr. Hively as to how often the system was cleaned and Mr. Hively replied once a month with hot soda ash. He said the Dorr system was used, which was one of the best closed systems in the country. Homer E. Stafford was asked the kind of a save-all he used and replied the Bird save-all. He got excellent results by using the white water from the save-all for beaters and on showers and rotary screens. One reason his mill had no trouble with slime was because they used copper piping of small caliber, the force of fluids in the pipes keeping the interior surface free from slime or dirt. Mr. Williamson said it was an interesting point, this use of small caliber copper pipe.

Drying Problems

The discussion then turned to drying problems, Mr. Hively saying that he had a machine, the dryers of which dried too hard on the back side, whereas another member said it was his experience that dryers dried more on front than on back.

Gunnor Nicholson, of the Bogalusa Paper Company, mentioned that he had experienced a good deal of trouble in effecting uniform drying of paper until a Ross-Grewin High Pressure Vapor Removal System had been added to the mill equipment.

Composition of Rosin Milk

Edward McWhirter, of Provincial Paper Ltd., Georgetown, Canada, started an interesting discussion on the right composition of rosin milk for sizing, but nothing definite came of it. He desired to know what was the right percentage of solids to use. His paper was found to be slack sized with 2½ per cent solids. He said he used 33 per cent size, but failed to state whether it was a high free rosin or a neutral size.

Meeting of the Board Division

The Board Division met in the Independence Room of the Benjamin Franklin on Friday afternoon simultaneously with the other divisions and listened to papers and discussions on the use of silicate in the manufacture of laminated board (James G. Vail); water removal on wet and board machines (George Weyman); the use of wax in sizing (R. W. Kumler and G. H. Lafontaine); asphalt board (D. P. Bailey); pH value of water and stock (Ralph Shaffer, MacAndrews & Forbes Company).

PH Values in Determining Relation of Water to Stock

The importance of adjusting the pH value of water and stock to the colors used in tinting board was emphasized in the paper by Mr. Shaffer. After having experienced difficulties with pulps on account of a wide variation in pH value, the MacAndrews & Forbes Company adopted standard pH values for all grades of pulp used. If a certain lot of pulp is purchased that is either above or below the standard pH value for color work, the excess acid or alkali is neutralized to prevent mottling of the color.

Mr. Shaffer said there was a need on the part of dye manufacturers to establish and maintain pH determinations of the stock used by them in producing what is called a color match for the board mill superintendent to reproduce. He instanced a case in proof of the value of pH determinations. He had been consulted in regard to the production of an extremely delicate tint for a board the furnish of which was a combination to two different grades of pulp. The color manufacturer was asked to recommend a color combination and samples previous to the run on the machine. Such samples were submitted in routine fashion, but when the run was made the shade was found to be much darker than the color match submitted, notwithstanding that only 60 per cent of the recommended amount of color was used. pH determinations of the stock in the beater were made and it was found that one of the pulps in the furnish was 2.0 pH lower than the other pulp. This was corrected by adding alkali to the acid pulp and beating it in presence of the alkali for fifteen minutes before proceeding with the furnish. Then after coloring was completed, the stuff in the beater was acidified to the normal dumping pH value. The resulting color was satisfactory.

The pH value was stated to be of great importance in calender stain work. The pH value of calender stains should approximate closely the pH value of the sheet to be tinted. The precautions necessary to be taken in keeping the pH value of stock and colors equal were exemplified by the experience of a board mill superintendent who was running a deep shade of orange board on one of his machines. The board was dyed in the beater and also calender stained. On previous runs the board had turned out well, but on this occasion a heavy grained appearance developed and it was discovered that the barrels in which the calender stain had been mixed had at one time been used for dilution of acid to be used for souring a felt. Although the barrels had been washed before the calender stain had been mixed in them, sufficient acid was left in the wood to drop the pH of the calender stain 2.5 pH below the pH of the sheet, which was pH 6.3. As soon as this was determined—sufficient alkali was added to the stain to bring the pH value of the stain to pH 6.1 (four pounds of soda ash were used) and at this value there was no grain-raising and in fact the finish was superior to the runs which had been made previously without regard to pH value.

The pH of the water used on the calenders should be watched, it having been determined that the water had a marked effect on the shade of uncolored manilas and whites, and incidentally affected the character of the finish. A pH of 6.8 to 7.2 yielded a fine creamy shade and the finish was excellent on a manilla board, whereas lower pH values leaning to the acid side were gray or dull and rough.

In beater coloring, the order of rotation of colors is important. Some beater dyed orders take a combination of two or more colors, acid and basic colors being often used together in the same beater. If the beaterman is pressed for time, the basic color may be added immediately after the

acid color or vice versa. There is no objection to this, providing the pH of the stock in the beater after adding the acid color is such that it will not affect the basic colors. If the basic color used should be highly susceptible to the action of alkali, which nearly all are, the pH of the stock in the beater should be at least pH 4.5 before adding the basic color, otherwise the basic color will be thrown out of solution and lost. This also applies, conversely, to adding acid colors following a basic color—in this case the stock after adding the basic color and before adding the acid color should be at pH of 7.1 to 7.3; however this condition is met with very rarely as acid colors are usually added to the furnish before the basic colors are added.

CLOSING SESSION, SATURDAY, MAY 31

A short business session was held on Saturday morning at which President-Elect Carl Magnus was installed by Retiring-President Ramsey and a report was submitted by the Committee on Resolutions. Mr. Ramsey improved the occasion to thank the Committee on Arrangements, "and especially the man who did 90 per cent of the work", meaning J. Bertwell White, for a highly successful meeting, whereat Mr. White disclaimed doing 90 per cent of the work and graciously gave credit to his associates, mentioning particularly Roy H. Underdown and Frank E. Winslow.

Resolutions of Thanks

Michael J. Argy, chairman of the Committe on Resolutions presented a brief report consisting of resolutions of thanks to Retiring-President Ramsey, J. Bertwell White, the Mill Service Committee and its chairman Killey E. Terry, as well as a special expression of thanks to the officers of the various divisions for the work of the past year.

The report of the Committee on Resolutions was adopted unanimously.

Carl Magnus Installed as President

Carl Magnus was then escorted to the platform and formally installed as president of the American Pulp and Paper Mill Superintendents Association.

In acknowledging the honor, Mr. Magnus said that the best he had got out of the association was the thing that money could not buy. The association had now bestowed its highest honor on him and he pledged his best efforts to maintain its splendid record. The one big job confronting superintendents was to produce pulp and paper at a profit. It was becoming more difficult every day to do this but the trouble was not with the superintendents but with the individual sales policies of many firms. In closing, he made a strong plea to the members to interest eligible men in joining the association.

The regular business of the morning sitting was then taken up, the room being prepared for an exhibition of lantern slides of and a talk on the manufacture of wires by representatives of the Eastwood Wire Corporation.

Improvements in Fourdrinier Wires

A very interesting account was given by Joseph H. Dow and Nelson W. Webb of developments in the manufacture of fourdrinier wires. By means of lantern slides the interior of a wire weaving plant was placed on view and various problems in the handling and treatment of wires were demonstrated and explained.

The impression was conveyed that fourdrinier wire manufacturers have more than kept pace with the development of fast running paper machines. "Few industries have shown more improvements than have the brass and bronze producers in the past two decades, and their finished product is our raw material," said Mr. Dow. He showed the treatment of the raw material from rods of comparatively large size, say a foot long and a quarter of an inch in diameter, to the fourdrinier wire made from it measuring over 7,800 ft. in length which is woven into a sixty-mesh wire cloth. In attenuating the strand of metal, it is successively pulled through twenty-nine dies, each of which is a conical hole in a diamond.

The greatest improvement in the manufacture of fourdrinier wires was referred to as the method of joining their ends. The wire manufacturers were availing themselves, Mr. Dow said, of all the tools of engineering science to improve their product just as papermakers were doing to improve the art of papermaking. He said that the wire now operated under improved conditions because of the fact that papermakers had insisted on better regulated inlets, ball bearing tube, breast and carrying rolls, better guides, closer attention to suction box covers; the substitution of the suction couch roll for the top couch, etc. Developments in the manufacture of wire were exhibited by means of lantern slides of wires and wire seams, photomicrographs being also projected to illustrate the formation of cracks in wires. The paper and demonstration attracting the interested attention of all present and was greatly appreciated.

A good deal of interest was taken by the members in the points brought out by Mr. Dow and many questions were asked of him regarding methods of repairing wire breaks and the factors that influenced wire life, all of which were answered either by Mr. Dow or Mr. Webb.

An Electric Pulpwood Rake

A movie film that was not on the program was provided by J. W. Boyce, of the Maine Electric Company, Portland, Me., who exhibited and described the operations of an electric power rake for storing and reclaiming pulpwood. The rake works on the drag line principle and is operated by an operator stationed in a movable tower. The drag line extends from the tower to a large pulley anchored some distance away which marks the starting position of the rake. The moving pictures were taken in the woodyard of S. D. Warren Company, Cumberland Mills, Me., which operates a complete installation. The rake weighs 9,000 lbs. and is 30 ft. long and 12 ft. wide. It is operated by a 200 hp. motor. The average capacity of the rake was said to be eighty cords per hour; it operates at a speed of 400 ft. a minute.

Demonstration of "The Electric Eye"

The sitting was brought to a close with a highly spectacular demonstration entitled "Photo-Cell or the Electric Eye". This was staged by H. B. Stevens, of the Westinghouse Electric and Manufacturing Company, who addressed the members on "Photo-Electric and Glow Discharge Devices and their Application to Industry".

The members had been prepared for something out of the ordinary, for as they entered the auditorium they crossed a beam of light which extended across the entrance. Every interruption of the beam actuated a counter which clicked audibly. They were being counted automatically. Mr. Stevens pointed out later in his demonstration of other operations of the photo-electric apparatus that it could be used for toll bridges, vehicular tunnels, traffic surveys, for the counting of items in mass production, or for detecting paper breaks in mills where machinery must be stopped instantly to prevent accidents.

Use as an Electric Inspector—The "Electric Eye" performed with uncanny precision many astonishing acts. Where routine tasks of inspection and sorting have heretofore been dependent upon the easily wearied human eye, a mechanical never failing process may now be substituted, Mr. Stevens said, thus releasing workers for less monotonous tasks. Small packages of a manufactured product were automatically moved through the beam of the photo-electric apparatus, and those of a defective shape, or without a label, were rejected and tossed aside as the product moved through the spot of light. More accurate than the human eye, this electric inspection is said to operate equally well day or night under any weather or temperature condition.

Fire Detector and Extinguisher—A lighted match was tossed into a mixture of gasoline and kerosene on the lecture platform. The first cloud of smoke instantly operated the "photo-electric smoke detector," and sounded a shrill whistle alarm, at the same time releasing a stream of carbon dioxide from a cylinder which extinguished the fire before the audience realized what had happened.

The protection against explosion in domestic oil and gas furnaces was also demonstrated, showing how the flow of fuel could be instantly stopped, when for any reason the flame was extinguished.

The grid-glow tube was said to be applicable as a protection against theft as it will act instantly and operate a suitable alarm, when anyone even approaches it. The proximity of a hand is sufficient to actuate the sensitive apparatus.

The advent of the radio, it was pointed out, had, with television and the talkies, been a great stimulus to an intensive study of vacuum-tube devices and the discovery of an ever-widening application for them. The Westinghouse Company, Mr. Steyens said, had given much study and research to these applications, resulting in many new fields for their use in industry during the past two years.

BANQUETS AND ENTERTAINMENTS

The entertainment provided by the very capable Committee on Program and Entertainment, headed by Frank E. Winslow, was of an extent and variety that surpassed that of any previous convention. There were two banquets, one on Thursday evening, the opening day of the convention, following a delightful steamboat excursion that lasted from noon until 7 o'clock in the evening, and another on Friday, at both of which music and singing were indulged without limit. At the first banquet the place of the Hon. Harry A. Mackey, Mayor of Philadelphia, as toastmaster was most acceptably filled by the Hon. John J. White, former mayor of Holyoke, Mass., and the principal speaker was Russell Creviston, sales promotion manager of the Crane Company, of Chicago and New York. An all-star vaudeville entertainment followed the speechmaking. This was directed by one of the most charming and accomplished young women ever seen on the vaudeville stage. She won the enthusiastic support of every person present, all numbers and comedy acts being heartily applauded.

An Anniversary for President Ramsey

After announcing the appointment of committees on Audit, Resolutions and Nominations and the reading of a telegram from Ben. T. Larrabee, President Ramsey started the speechmaking by reminding those present that it was something of an anniversary celebration for him, it having been in the Benjamin Franklin Hotel that he and others had organized the Penna.-New Jersey division of the Superintendent's Association. After paying his compliments to the ladies and the salesmen present, he introduced John J. White as the man who had been selected to take the place of Mayor Mackey as toastmaster of the banquet.

"Jack" White is Toastmaster

Mr. White was cheered to the sky when he began to function by telling some rare and, let us hint it, rather risque stories. Surely by voice, gesture and intellectual equipment "Jack" White is a perfect toastmaster.

Great Speech by Russell Creviston

Russell Creviston, sales promotion manager of the Crane Company, made the big speech of the evening. In introducing him, Toastmaster White was effusive in his references to Mr. Creviston's business ability and Mr. Creviston protested that his introduction was a little too big and generous. He said it prompted him to wonder how long Americans were going to be the gluttons they are for punishment in the way of after-dinner speeches. However, he agreed with Roosevelt that if they have to be endured he would rather make them than listen to them. He said it was told of Roosevelt that he made four speeches: the speech he made on the way to the meeting, the speech he made at the meeting, the speech he made on the way home and the speech that the newspapers said he made. "Now, I will have to wait for my good friend Weston of THE PAPER INDUSTRY magazine to report that fourth speech for me."

At Home with the Superintendents—Mr. Creviston then launched into his speech. He said he felt very much at home, as an engineer, with the superintendents. He could appreciate their problems, for as a sales promotion man the first thing he had to do was to familiarize himself with the elements of production. He said he believed that one of the greatest problems confronting industry today was the problem of production, administration and distribution. Because of that belief he proposed to discuss in brief fashion the subject of Humanics versus Mechanics. He spoke substantially as follows:

Humanics Versus Mechanics

I believe that in present-day business the greatest problem that we have is the co-ordination of the human factors with the mechanical factors in our business. To you men as engineers, as plant superintendents, as plant managers and as salesmen, if you will look to the human element which enters into your every-day business and attempt to solve that element in the terms of every-day life outside your business, you will come pretty near solving the problems of your business.

Discuss Problems with the Womenfolk—The toastmaster and the chairman referred to the ladies. I am very happy to see so many ladies in attendance at your meeting. Very little can go wrong with your association as long as you have the attendance of the women, as you have now; and I want to add a word to that: if you men, regardless of your positions in your respective businesses, will take your problems home and discuss them with your wives, with your daughters, with your mothers, and thereby get the benefit of that human intuition which is so common in women, you will be taking the first direct step towards the solution of those problems in business.

Women Dictate World Markets

I believe that, as business men, we have overlooked the fact that the cure for our business ills lies in an understanding of the psychology of women and children. The markets of the world today are dictated by the minds, the thoughts and the habits of women and children; and if you want to know the sound psychology to put back of your sales program, to guide you in your production schedule and to guide you in the engineering of your products, take those facts to your homes and solve them with the help of the women members of your families. They are closer today to the pulse of the market, because they constitute the market, than we who are engaged actively in our business.

Influence of Modern Inventions on Business—I wonder sometimes if we, as business men, fully appreciate the tremendous change that has come into our business during the past decade. We have only to stop and ponder for a moment to realize that within your memory and mine have come marvel upon marvel: the aeroplane, the telephone, the radio, the Zeppelin, the wireless, the talkie—all of those modern inventions have been crowded into our industrial existence within a very short period of time, and their effect upon the public mind is as yet, in my humble judgment, not thoroughly understood by those of us who are responsible for the development, maintenance and direction of our business.

Recommends Study of Other Industries—I believe that, as successful business men, we must familiarize ourselves with other lines of business. For just a moment I wish to use two illustrations. I do not believe that you can be successful papermakers and not thoroughly understand the problems of the building industry and the transportation industry. If you will but look into the problems that are facing the building industry today and will attempt to get down to the basic problems that are confronting that industry, and the reasons for those problems, you will have the solution of many of the problems of your own industry. This age of invention, that I have just mentioned, has completely changed the social aspect of the home; transportation has been changed, and as a result, the living habits of our people are entirely different from what they were only a few years ago.

Keeping Up with the Times—I was addressing an audience in New England some time ago—an audience of gentlemen engaged in the textile business. After the meeting I was visiting with some of my old friends, as that is home to me up there, and one man told me: "I do not think there is anything to do but wait." He was a manufacturer of cotton underwear. He said "Cotton underwear is coming back." Now, think of it! That man is doomed. Transportation has changed the habits of our lives in many ways. Building has changed our lives. Our buildings today are so well equipped that we do not need as much clothing as we used

to need. Transportation brings us the food of all climes, and as a result, the building industry, which is basic to the wealth of the nation, is now in a very critical state; and the reason of it is because those in the building industry have failed to realize these changing conditions. We have in this country about 1,650,000 inhabitants born each year. That requires about 400,000 living units, and upon the basis of those living units depends entirely the new building construction each year; and, therefore, the building industry, like all other industries, is over-produced.

One of the problems of the paper industry, I am told, is over-production. Now seriously, as business men, there is only one solution to over-production, and that is co-operation among those in your line, studying collectively the problems which are subject to collective thought, and individually, in your respective industries, delving into the questions which confront you and conducting research into administration, production and distribution, to the end that you may co-ordinate those three very essential elements of your business and thereby bring your production into conformity with the market, developing new uses for your products and lowering your cost.

The Wholesale Distribution Problem—I am of the opinion that you men in the paper industry are confronted with the subject of distribution from the standpoint of wholesaling, and the wholesale situation of the country has completely changed because of the transportation methods I have just mentioned. I am not familiar enough with it and, therefore, will not venture it as a fact, but only as a suggestion, that it might be well for you, as manufacturers, to look into the wholesale distribution problem and see whether or not you are getting the distribution into the small sections, which the general wholesale distributors of the country are endeavoring to secure in all lines.

The Future Full of Promise—Now, I am not one who looks pessimistically at business. I believe, however, that we, as business men, must take the long view. We are going to have stock-market recessions in the future, just as we had last fall; we are going to have other problems that are common when economic and social laws are violated; but to the man who is organizing his business on a business basis, through research and co-ordination, and who is taking the long view, the future holds promise.

Mr. Creviston's speech was received with prolonged applause.

Introducing Jesse H. Neal

Toastmaster White prefaced his introduction of the next speaker, Jesse H. Neal, general manager of the American Paper and Pulp Association, with a few choice stories which served to heighten the general enjoyment.

Picture taken at annual banquet of the American Pulp and Paper Mill Superintendents Association, May 29, 1930, at the Benjamin Franklin Hotel, Philadelphia

Mr. Neal made a pleasing impression, as he always does, by speaking briefly and to the point. Having been introduced as a New Yorker, he remarked that he had not always lived in New York and could appreciate some of the toastmaster's stories bearing on his experiences in that city. He said he knew of one adventurous gentleman from the West who had explored some of the dark places of New York and had the misfortune to be held up by a gunman on his way home one night. The gunman said: "Give me your money or I'll blow your brains out," at which the westerner replied, "Well, go ahead, I have been two days in New York and have learned that you can get along here without brains, but not without money."

This concluded the speechmaking, the rest of the time being spent in the enjoyment of an excellent entertainment program.

Friday Evening's Banquet

The second banquet on Friday evening, at which President Ramsey was toastmaster, was distinguished by the presentation of a past-president's badge to Mr. Ramsey, who was also presented with a watch, the gift of L. D. Post to the man who has been adjudged by the executive committee to have rendered the greatest service to the association during the preceding year.

Golf Prizes

Prize winners in the golf tournament which was played on Wednesday were announced by "Joe" Dow and prizes awarded as follows:

The Eastwood Cup presented to the association for annual competition, which must be won three times in succession before it becomes the property of the player, to E. J. McDonnell for best low-gross score, and an additional prize of a silver cigarette case.

A fruit bowl given by Stein-Hall Company was won by Frank S. McDonnell for the best low-net score. A golf bag given by Shartle Brothers was won by "Bill' Croft for second low gross.

Salesmen's prizes, consisting of a sandwich tray and an ice bowl, were won by George A. Hermann, of Hermann Manufacturing Company, Lancaster, Ohio, and J. W. Boyd, of Maine Electric Company, Portland, Me., for low gross and low net, respectively. The Salesmen's prizes were donated by the association.

The Speech of the Evening

The principal feature of Friday's evening banquet was an inspirational speech on "Human Engineering" by Dr. Manly P. Northam. This lasted two hours and was heard with intense interest by a rapt audience. Some of the pithy sayings uttered by Doctor Northam to the accompaniment of chalk drawings on a large blackboard were well calculated to arouse flagging enthusiasm on the part of any person. Thus, he said, "No man is a failure until he is dead or loses his courage," and "The reason why men don't accomplish more is that they don't try more," and men succeed according to their ability to sway others." He counselled his hearers to develop personality and ability to sway other men.

Doctor Northam said we should cultivate the habit of sending out loving thoughts, for what one sends out is the only thing that can come back to one, and if a person deals in hateful thoughts these will return to him. He said "Deal in high thoughts and stop tuning into low vibrations." He gave a blackboard demonstration of the growth of thought and scored the procrastination which was a result of mental and physical laziness, which, he said, should be fought all through life.

A manufacturer of a general line of paper specialties, having described its product and solicited its sale with the statement "It is the only crepe paper than can be sewed successfully by hand or on a sewing machine," has entered into a stipulated agreement with the Federal Trade Commission to discontinue the use of this statement. The company also agreed not to use any other representation which would confuse the public into believing that its crepe paper is the only product of its kind that can be successfully sewed, when such is not the fact.

Determining Groundwood Stock Quality[1]

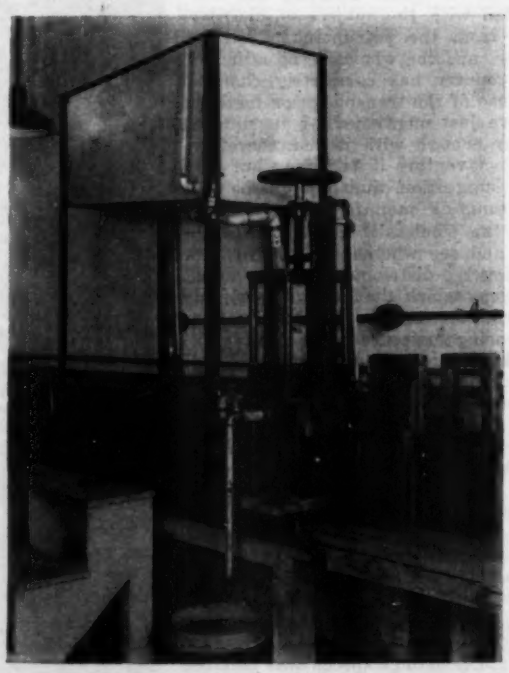
By J. CAMPBELL, Ph. D.
Director of Research, International Paper & Power Co.

THE purpose of this paper is to present before you a method by means of which the fibers in groundwood pulp can be separated into classes according to their different fiber lengths.

As groundwood pulp is a mixture of wood fibers of various lengths with wood flour, it has been the custom in groundwood mills in order to determine the suitability of the pulp for various purposes, to dilute the pulp with water to a thin consistency and place it in a shallow receptacle, the bottom of which is made of blue glass. The pulp is then examined by transmitted light through the blue glass and the proportion of slivers, long fibers, short fibers and wood flour that is present, roughly estimated. This method is quick and has given a certain amount of satisfaction, according to the skill and experience of the operator. The method at best, however, is only approximate and it is possible for two experienced operators to interpret the appearance of a stock on the blue glass in two entirely different ways, but apart from this the method does not lend itself to a definition of stock in terms of numerical figures, which can be universally used and is independent of any personal observations.

The apparatus designed for classifying the groundwood pulp into its different fiber lengths is that shown in Figure 1.

The apparatus is simply a small flat screen, so arranged that the screen part can be easily and rapidly removed, cleaned and substituted for another screen. About 60 grams of stock is taken and diluted with water in a tank to a consistency of about 0.1 per cent. The stock is then screened successively through a .007-inch plate, then through 10, 20, 30, 50, 90 and 200 mesh screens. The results of tests made of grinder pit stock are shown in Table 1. In this table is also shown the original freeness and strength of the stock. The



Apparatus for fractional screening of groundwood pulp

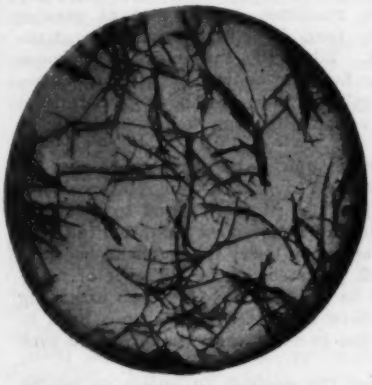
freeness tests were made with the Canadian Forest Products Laboratory tester and the strength test figures are those of the Mullen gauge pop in pounds, of a sheet having exactly a basis weight of 32 lbs. for 500 sheets—24x36.

[1]Read before the American Pulp and Paper Mill Superintendents' Association at Philadelphia, May 30, 1930.

Stock retained on .007-plate

Stock retained on 20-mesh screen

Stock retained on 30-mesh screen



Stock retained on 50-mesh screen

Stock retained on 90-mesh screen

Stock retained on 200-mesh screen

It will be noticed in Table I that the freeness or strength of the pulp is not a direct function of any one class of screened fiber but is rather a function of the manner in which the different classes of fiber blend together.

TABLE I
CLASSIFICATION, FREENESS AND STRENGTH OF GRINDER PIT STOCK

PER CENT RETAINED ON										
.007 Plate	10 Mesh	20 Mesh	30 Mesh	50 Mesh	90 Mesh	200 Mesh	White Water Thru 200-M	Consistency	Freeness	Strength
1.1	0.4	0.8	3.7	15.9	25.4	18.6	34.1	3.7	102	7.1
1.3	0.3	3.1	9.7	22.7	22.5	14.0	26.4	4.3	105	10.6
1.6	0.2	2.4	7.2	24.2	24.1	16.0	24.3	3.9	101	11.3
0.8	0.4	0.4	3.5	21.1	34.8	23.3	15.7	4.5	130	5.8
1.2	0.1	1.1	3.6	17.7	20.1	14.5	41.7	6.3	92	6.9
0.9	0.3	0.3	3.0	19.8	26.1	5.3	44.3	4.9	154	7.0
1.4	0.3	2.1	9.0	20.4	23.1	15.2	28.5	5.6	67	9.2
1.1	0.3	1.6	3.5	15.9	17.3	12.6	47.7	5.4	157	7.2
1.0	0.4	1.1	3.9	16.8	20.8	14.5	41.5	7.0	110	6.6
1.5	0.8	1.4	3.4	18.0	17.0	16.6	41.3	5.3	107	8.8
0.9	0.5	0.9	3.6	18.5	20.5	17.9	37.2	7.6	87	7.5
1.6	0.2	1.6	5.1	16.2	20.0	9.3	46.0	6.8	62	10.2
0.7	0.1	0.5	5.4	11.7	15.4	11.6	56.6	7.0	54	8.9
1.3	0.1	0.6	3.5	15.9	19.4	16.9	42.3	5.8	23	10.7
2.0	0.7	1.8	6.3	17.6	20.3	15.2	36.1	5.3	164	7.8
3.7	0.4	6.8	9.7	25.9	23.0	14.4	16.1	6.6	195	7.2
2.6	0.8	1.3	6.7	23.3	25.1	23.6	16.6	4.3	132	9.9
2.3	0.3	3.0	10.6	22.7	20.8	13.9	26.4	3.8	68	12.9
2.6	0.7	3.4	9.8	20.7	20.9	16.5	25.4	3.8	60	11.4

In Table II is shown results of tests made on groundwood pulp which had been screened and thickened in the mill.

TABLE II
CLASSIFICATION OF GROUND WOOD SCREENED PULP

PER CENT RETAINED ON										
.007 Plate	10 Mesh	20 Mesh	30 Mesh	50 Mesh	90 Mesh	200 Mesh	White Water Thru 200-M	Consistency	Freeness	Strength
-	-	1.8	9.2	19.7	21.1	22.2	26.0	2.61	70	9.3
-	-	0.9	7.9	15.2	20.1	14.0	41.9	2.75	70	9.4
-	0.4	0.8	3.9	19.1	19.5	15.3	41.0	2.74	74	8.9
-	-	0.2	4.7	20.4	21.6	15.4	37.7	2.60	68	8.5
-	-	0.1	5.9	19.6	23.6	16.9	33.9	2.65	76	9.4
-	-	0.5	3.9	21.5	22.6	16.0	35.5	2.70	78	8.9
-	-	0.5	4.1	21.8	21.4	15.4	36.8	2.68	82	8.4
-	-	0.8	8.0	25.0	18.4	14.7	33.1	2.60	83	9.0
-	-	0.8	6.4	20.2	25.1	14.4	33.1	2.58	70	8.8

If Table II is compared with Table I, it will be seen that in Table II, stock retained on the .007-inch plate, 10 mesh screen and a portion of the 20 mesh screen, has been removed by the mill screening process, except in the case of one sample. This illustration is given to show the possibility of the mill screening system screening out some of the good long fibers, as those retained on the 20 mesh screen would be for certain purposes. Generally, mill screened stock should show no retention on the .007-inch plate and some retention on the 10 mesh screen.

In Table III is shown a classification of groundwood white water from the groundwood white water tank.

TABLE III
CLASSIFICATION OF GROUND WOOD WHITE WATER

PER CENT RETAINED ON							
.007 Plate	10 Mesh	20 Mesh	30 Mesh	50 Mesh	90 Mesh	200 Mesh	White Water Thru 200-M
-	-	-	0.5	1.5	3.4	10.2	84.4

It will be seen from this table that a very large proportion of the white water fines go through a 200 mesh screen.

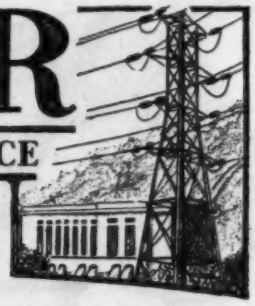
In order that some idea may be obtained of the size of the fibers collected on the different mesh screens, a series of photomicrographs are given below. These photographs were taken under a magnification of 20X.

The classification of groundwood stock into its different fiber lengths is one method of determining whether or not the pulp is of suitable quality for any particular purpose. Stock in corresponding screen classes should be compared with the standard stock classification which is particularly suitable for any one kind of paper.

It is my belief that the screen classification of stock will do much to clear up the vague impressions which now exist as to what is meant by "Stock Quality" and will also be a very important instrument for groundwood investigations.

POWER

GENERATION - UTILIZATION - MAINTENANCE



By W. S. JOULE

This section turns the searchlight upon power and its allied problems. It shows up big possibilities to save. Opportunities to improve conditions, methods, apparatus will be discovered. Worth while practices suggest new ideas and wider usages of equipment.

Influence of Concrete in the Power Plant

THERE'S many a job where concrete offers the best way out. It is permanent, fireproof and usually easy to erect. There are many instances where concrete solves the problem more quickly and simply than any other form of construction—and mostly permanently.

Present-day power plants must be constructed of enduring, fire-resisting materials if they are to withstand rough usage. Since the plant must be run as a commercial enterprise, building costs must be kept within reasonable limits, ground area must not be wasted and labor costs must be minimized.

These considerations play their part in making concrete a building material of wide use in power plants. Once concrete has been adopted, it naturally effects the design of the structures in which it was used. Consequently, many phases of power plant design owe their origin to the use of concrete.

Typical Uses of Concrete—The construction of waterways, reservoirs, and similar structures will depend largely upon the size and the use to which they are put. Underground tunnels, for example, are frequently made of pre-cast concrete piping. Small dams are usually cast in the same manner as walls and foundations to buildings. Large breakwaters are frequently cast in units which are then securely put in place.

The handling of coal has been materially facilitated through the use of concrete. Overhead tracks are frequently run over the bins and the cars are dumped, resulting in a saving in ground space, as the tracks need not be adjacent to the bins and also in labor, as less time is required to dump and clean the cars.

At many plants the coal is unloaded into a track hopper and carried up to the bunkers placed over the boilers, a mechanical operation throughout. The use of concrete eliminates corrosion in the bunker. Repair expense is minimized.

With overhead bunkers the coal is conveyed directly to the stoker hoppers. Valuable floor and ground space is saved, since the coal is kept above the furnaces and not on the same level. Re-handling is unnecessary.

Concrete ash pits are used for the same reasons as for coal bunkers. They can be built to meet local conditions and if properly planned can be made to effect a saving both in space and in operating labor. They eliminate fire hazards.

Concrete chimneys are valuable primarily because of their strength. A tall chimney is likely to overturn or to break off at any point in its height in a strong wind, unless made of an exceptionally strong material. Since a reinforced chimney is a single unit and is as strong structurally as any building, it can withstand this natural action.

A properly constructed concrete chimney should give service indefinitely without requiring repairs and upkeep charges; and lends an artistic touch to the surroundings. The primary purpose of the stack is to produce sufficient draft for complete and rapid combustion. Since concrete has insulating qualities and is impervious, it cuts down heat loss through the walls and leakage or air infiltration.

Reinforced concrete construction gives security against fire with lower premiums for insurance in consequence. One of the chief causes of spontaneous combustion in coal piles is due to the flow of air through the pile, so providing a source of oxidation. Unlevel ground is a frequent cause of this. A layer of concrete laid over the ground upon which the coal is to be stored results in leveling and provides an impervious base or foundation for the coal pile.

Since concrete is not subject to vibratory action, machines can be run at greater speeds than is safe where other structural materials are used. When the equipment is anchored to a reinforced concrete floor or ceiling, it will set up no harmonic action. This quality of concrete has often permitted machines to run 20 per cent faster than would otherwise be safe.

Concrete offers a simple, quick and inexpensive way of rehabilitation. It can be used to protect and reinforce steel which is corroding. It provides protection and so gives existing structures an extended and almost infinite life. For example, steel hoppers are very short lived due to the acid and sulphur which attack the steel in the presence of moisture. Steel hoppers can be lined with concrete, so extending their life indefinitely where otherwise they would have to be taken out of service due to structural weakness and even perforation.

The use of concrete and the methods following its use result in reduction in space, decreased labor and upkeep cost, freedom from fire hazards and a dependable layout and structure.

Regulating Transformer Load by Temperature Rise

ELECTRICAL equipment may often be abused during the cold, winter months, by subjecting it to excessive overload without injury, whereas the same treatment during the hot summer months may lead to its destruction. It is well to know, therefore, just how heavily electrical equipment may be overloaded on account of cold weather and, on the other hand, to what extent the load must be reduced during the summer months.

It is the temperature at the "hot spot" that determines how far transformers may be overlooked. Since transformers depend upon outside temperatures to determine the rate of cooling, a transformer may be operated at much higher loads during cold weather than during hot weather. Therefore, when a transformer characteristic is known and when the difference between the "hot spots" and the oil or outside air is known, the transformer may be operated at heavier loads for short periods and less heavy loads for longer periods with comparative safety.

Engineers who may be called upon to operate transformers to the limit will find the facts brought out in a paper entitled "Operating Transformers by Temperature" presented before the A.I.E.E., at their January, 1930, meeting in New York, of value, especially with the approach of the hot summer months when some apprehensions may exist as to the ability to overload transformers without jeopardizing their safety. The suggestions, condensed, are as follows:

Limiting Observable Temperature of Transformer Oil—Under no circumstances should oil in which apparatus is permanently immersed have an observed temperature, by thermometer, in excess of 90 deg. C.

Rated load—Apparatus conforming to A.I.E.E. standards for rating is suitable for carrying rated load continuously provided that the temperature of the cooling medium does not exceed 40 deg. C. for air or 25 deg. for water.

Cooling Air and Water Exceeding 40 Deg. and 25 Deg. C.,

Respectively—For apparatus conforming with the standards for rating, the load should be reduced 2 per cent below the rated load for each degree that the temperature of the cooling air exceeds 40 deg. or that the temperature of the cooling water exceeds 25 deg. However, the use of apparatus in cooling air exceeding 50 deg. or in cooling water exceeding 35 deg. shall be considered as special.

Loads Greater Than the Rated Load—Apparatus not equipped with a winding temperature indicator may be loaded continuously 1 per cent above rated load for each degree Centigrade that the temperature of the cooling medium is below 30 deg. for air or 25 deg. for water.

In other words, when the temperature of the cooling medium is 0 deg. C. the permissible continuous load is 130 per cent of rated load for air-cooled apparatus and 125 per cent of rated load for water-cooled apparatus.

Loads greater than 130 per cent of rated load for air-cooled apparatus or 125 per cent of rated load for water-cooled apparatus should not be applied under any conditions even though the temperature of the cooling medium be lower than zero.

Apparatus equipped with a winding-temperature indicator may be loaded continuously in excess of rated load so long as the indicated winding-temperature does not exceed the following limits for indicators marked in terms of:

Hottest spot temperature .....95 deg. C.
Embedded detector temperature .....90 deg. C.
Resistance method temperature .....85 deg. C.

Oil temperatures alone are not an adequate criterion of the winding temperature, because of the (1) increased temperature drop through the insulating at low temperatures of the cooling medium and of the (2) time lag between the winding and oil temperatures. It is not safe to judge the maximum safe load on equipment, therefore, on the basis of oil temperature alone.

Many paper and pulp mills purchasing central station service employ transformer vaults, either above ground or below. It is particularly important during the summer to watch these vaults for ventilation, employing forced ventilation if necessary by the application of either blowers or forcing air through the vault or pumps for circulating the transformer oil. Meanwhile, engineers who study the above suggestions will be able to protect their equipment on the one hand and increase the safe load from it on the other.

A cheap oil mixed with deflocculated graphite can be used in emergency to replace a higher grade of oil.

Combatting Corrosion and Erosion in Hydro-electric Plants

QUITE often, the aparatus and equipment which is most accessible and which is most easily handled receives the most attention. Generators are blown out and cleaned; oil switches have the oil changed; switchboard instruments are checked, bearings are examined and renewed and governor mechanisms are inspected and overhauled. In many plants, however, the water turbines are left alone, probably on the hypothesis that it is best to "leave well enough alone." As a matter of fact, surprising loss in efficiency and capacity can occur with hydraulic turbines due to corrosion and attrition. Absence of over-all tests, due largely to the difficulty of measuring water flow together with the fact that what is "out of sight is out of mind" results in conditions being allowed to get in quite bad shape in many instances before anything is done. In other cases the true situation is only brought to light by accident. It would be worthwhile in the majority of hydraulic plans to make an examination of every water turbine this spring or summer. The fact that equipment is operating without any trouble is no indication that it is in "top notch" condition.

Erosion and attrition may work havoc with buckets and blades, especially on high-head plants where considerable sift and sand is brought down. Unfortunately the high-velocity water, in any cases, develops a gradual erosion that has a greater influence upon the efficiency of the wheel than it has upon its life. Because unsuspected, very serious damage may result to hydraulic units from both erosion and corrosion, so that irreparable damage is done before it is discovered. In many instances what appears to be erosion may be found to be corrosion.

All iron and steel parts subjected to moisture or submerged in water are, of course, subject to attack by rust and since the use of copper, nickel, chromium, lignum vitae and bronze are out of the question except for certain parts, the problem is to protect the iron and steel surface as far as possible. Nickel and chromium plating, metal sprays, galvanizing are being used to a limited extent in certain places. In isolated places all wetted working parts have been protected with bronze while the penstock has been lined with sheet lead. Enamels, special preparations, lacquer and paint are also being widely used for the protection of exterior metal surfaces. While none of these are of permanent value, many of them serve the purpose well. Their success depends very largely, however, upon the condition of the surface to which they are applied and a thorough cleaning of all surfaces is absolutely necessary for any degree of permanency.

For moving parts, cast steel and stainless steel are frequently important factors in combating erosion due to silt and debris as well as from erosion or scouring by the water. Alloy steel parts also hold great promise, although their high first cost has so far stood in the way of their wider application.

"Prevention is better than cure" and it is undoubtedly true that more engineers would encourage higher first cost of parts subjected to erosion and corrosion if they realized how rapidly deterioration may take place—and how difficult it is to combat it once it starts. Moreover, the first cost of erosion and corrosion resisting alloys and metal is not so high when the loss of the efficiency of the unit is taken into consideration, as well as the high cost of replacement and maintenance under difficult conditions. For example, in one recent case rust to an extent of over 20 tons was removed from one penstock and as the result the capacity of the existing wheels was increased some 25 per cent!

To combat erosion and corrosion, it is necessary to know which is occurring, to what extent it is taking place and what conditions are causing it. It is necessary to know whether or not the conditions can be prevented and if not how to combat their consequences. Then the cost of abhortive measures can be determined and balanced against the estimated saving due to lower maintenance cost, higher average efficiency, increased annual capacity, greater dependability, etc. More information is needed about the erosion and corrosion of hydraulic equipment, how it is caused and how to reduce it. More information is also needed as to the effect of corrosion and erosion upon over-all efficiency. Every time a unit is shut-down, it should be looked upon as a privileged opportunity to gather data and information on this matter which is of the utmost importance to every hydroelecric and hydraulic plant.

Entrained Air Causes Boiler Corrosion

AIR containing oxygen is one very great source of corrosion. It is the entrained air in water that causes so much trouble in boilers in the way of pitting. Pitting usually occurs most rapidly in the shell and other parts of a boiler at the prevailing water line. The reason usually advanced for this, and a sound one, is that the materials in the water become oxidized at the water line from contact with air and gas bubbles liberated from the water which gather and adhere at the surface and so cause corrosion.

Entrained air is particularly likely to exist where exhaust steam from auxiliaries, hot-water drips and similar sources of waste are used for boiler feed. This entrained air may not only cause corrosion and pitting boiler surfaces, valve seats, etc., but also rust out the pipes through which the water flows, unless precautions are taken to guard against it. The most common way of getting rid of entrained air is to boil the feed water at atmospheric pressure, in this way eliminating the dissolved oxygen. Boiling out the entrained air—deareration of the water—can be done by the open-type of water heater.

Wisconsin Safety Bodies Meet

Fox River Valley and Lake Shore Safety Conferences Hold One-Day Joint Session at Green Bay

THE Fox River Valley, and Lake Shore Safety Conference, of Wisconsin, described by Director W. H. Cameron, of the National Safety Council, as the biggest annual meeting outside of Chicago, held its one-day session in Green Bay, Wednesday, June 4. The attendance this year fell to a nominal 800, probably due to quiet business, more likely to a change of accent in the cities which compose the council. Safety instruction is now spread through the year in schools which attract about 4,000 foremen and key workers.

The conference met in five divisions for the morning, considering the problems of paper and pulp, the metal industries, woodworking, public utilities, and public safety. The afternoon and evening were given over to topics of interest to all delegates and utilized speakers from a distance. The Metals Section listened to F. A. Lauerman, Republic Steel Corporation; H. G. Hensel, Youngstown Sheet and Tube Company; Dr. Sidney Walker, Chicago. The Public Utilities drew all its speakers from Wisconsin. The Woodworking Section borrowed J. P. Kowsky from the Rockford, Illinois, Furniture Company, and Arthur Murray, Director of Safety from the Chicago Mill and Lumber Company.

PULP AND PAPER SECTION

The Pulp and Paper Section, thanks to veteran leadership, easily carried the banner for attendance and program. Over two hundred delegates representing some twenty-six mills gathered in the Fern Room of the Columbus Club. H. D. Banta, plant engineer of the Hoberg Mills, chairman of the program committee, called the meeting to order and introduced the Hon. R. G. Knutson, of the Wisconsin Industrial Commission, as chairman.

W. F. Ashe, Regional Director, read a message from the National Chairman, Samuel Pruyn, Chairman Knutson then called upon J. M. Conway, president and general manager of the Hoberg Paper & Fibre Company, to speak on the topic "Management as Applied to Safety". Mr. Conway is a former banker, drafted into service about six years ago to head up the Hoberg Mills. Primarily interested in the financial efficiency of the mill, he soon secured such a grasp of the manufacturing end as astonished his fellow workers and made for him an outstanding place as a paper mill executive.

Safety An Element of Progress

Mr. Conway started by remarking that safety is a subject in which all persons are interested. There are no party lines, no competitive interest between different units of industry, no political or industrial considerations to divide us, the underlying reason for safety being humanitarian and economic. He stated his opinion that any safety movement lacking in the interest of executives or heads of industry, is doomed to failure. The reason for this conviction is that plant executives combine with humanitarian interest practical considerations of economic necessity upon which fundamental safety must be founded in industry.

Executives learned that accidents mean loss and safety means profit. It merely took new legislation to place these losses before industry for their inspection, and so "safety" has been taken largely from the hands of the humanitarians and is now in the control of the business executive. It is there because progress, the motive of practically every successful movement, has called for it.

In carrying out the policies of management regarding safety, two distinct fields have been entered. One is of machine guarding, including lighting, ventilation, cleanliness, good housekeeping. The other is an aggressive educational policy.

Mr. Conway gave it as his opinion that public safety will never get very far until political executives look upon the matter from the managerial standpoint.

When Mr. Conway had finished, Chairman Knutson remarked "that Wisconsin Law has brought some employers to a wiser view, but the facts were here before the law." The Commissioner stated that out of every hundred dollars formerly paid by companies in defending themselves against injury suit, and in settlement of the injuries sustained by employees, only twenty-two dollars, or about one-fifth, reached the injured man. The rest was consumed in litigation. The chairman expressed himself as very much impressed with the frankness of Mr. Conway's statement and urged that his address be put into print for general reading.

The chairman then introduced J. H. Slater, general manager of the Escanaba Paper Company. He told of a real or manufactured incident in which his friend "Joe" was a fellow-mourner on a long journey on a passenger train. He convulsed the meeting by narrating Slater's troubles incident to the loss of his baggage and his statement that after "five hours thinking, damned if I can figure how the corks came out!"

The Human Hazard

Mr. Slater's topic was "Human Hazards in the Pulp and Paper Industry." He began by saying: "We are all born free, but men are anything but equal in mental power; in judgment, foresight and caution. This makes it essential that some men be the 'foremen,' the leaders who furnish the caution, the thoughtfulness and the judgment, to make good the lack of those qualities in the weaker ones."

Mr. Slater referred to his connection with a mill in New York State at the time when industry was just beginning to pay close attention to the avoidance of accidents. He installed many protective measures, and went the limit in guarding his machinery, but continued to observe accidents at the plant. Then his attention was called to the high rate of labor turn-over in two departments, and to the fact that most of the injuries were coming from these departments. Also to the fact that a number of foreigners or men not accustomed to machinery were the greatest sufferers. He began then and there to consider "the human element."

He urged the necessity for care in hiring men. Unfit men not only get hurt but they become a menace to others in the plant. Even good and efficient men may be lacking in education in safety matters. Foremen may be unwittingly the cause of accidents by tactless handling of men. They should be held accountable for such handling of their help as keeps them efficient in mind and thus better fitted to do their work. He stated that one of the worst accidents in his experience was the result of bitterness engendered by the disagreements between a foreman and his help. An employee of nervous type, telling about his grievance to another worker, inadvertently threw his own arm into the winder nip with the result of injuries that laid him up for a year and a half and left him permanently disabled.

Guarding as a Cost Factor

The third speaker, Fred J. Finkbeiner, a deputy in the service of the Industrial Commission, won applause for his appreciation of the view-point of industry. His topic was "Machine Hazards and Guarding."

Mr. Finkbeiner urged that the day of guarding is far from finished. Rather, in order to promote freedom for good production, guarding should be attended to and put out of the way. He gave figures showing the waste incident to accidents among the 24 mills represented in the section. In 1921 out of a total of 1,266 cases in his district, paper and pulp mills suffered 155 settled cases, including seven fatalities. These fatalities alone resulted in a loss of such magnitude

that every mill in the group represented at the meeting could afford to spend $4.00 a day for a year in guarding. The loss to stockholders in possible dividends would amount to $1,200 per mill.

W. J. Peacock was called upon to answer Mr. Slater's query: Why should his mill be unable to overtake others in safety contest? He volunteered the guess that it is because we cannot all be first, no matter how good we may be at the game. However, a reduction of two-thirds over a period of three years is a good record; this being Mr. Slater's plant record.

Chairman Knutson, himself, answered the peculiar question some workers have been known to ask: "Why should we be interested in accident prevention when only the employer and the insurance company benefit?" He stated emphatically that the actual beneficiaries are the workers. The average worker lives from hand to mouth. What does compensation mean but a reduction of his regular income? As to the insurance company, its income in premiums varies with the actual cost of its cases. Its premiums go up or down with the experience of a plant. As to the company, the cost of accidents represents loss and must be added to the charges for the good produced. In the long run, this means loss to the worker.

F. H. Rosebush, Nekoosa-Edwards Paper Company, asked for assistance in the guarding of the manufacture of nine-inch rolls. He stated that a suitable guard is lacking for the rewinder.

Mr. Finkbeiner referred to a guard produced by members of the Flambeau mill organization. He thought it good but too high in price.

Mr. Howard, Kimberly-Clark Company, stated that following the discussion of rewinder problems at the last safety congress, in Chicago, his firm had been working on a guard which they hope will be serviceable and inexpensive. He offered to explain the guard to any interested.

W. F. Ashe, Thilmany Paper and Pulp Company, said he hoped to continue winning the safety game the way Mr. Slater is winning it, by satisfactory reductions in accident frequency. He said he has a goal of 25/100 of one per cent days worked as a satisfactory minimum.

Luncheon Meeting

During the noon lunch, Green Bay contributed a witty speech to the program in the person of Archie McComb, attorney. His spoke on "The Public Attitude in Safety," with the accent on "attitude." He stated that the safety man's big job is to make an American public, crazy for thrills, appreciate "the glory of the things that don't happen!" "We are to teach people, especially children, the fun of going through life with a full complement of hands, feet, eyes an' sich, not to mention life!"

AFTERNOON SESSION

In the afternoon, the entire conference gathered in one of the finest of convention halls anywhere available, open to the breezes on all sides, quiet and spacious.

Present Safety Play

The Wisconsin Public Service Corporation presented first the play, "The Foreman is Responsible for Accidents." L. J. Engels, as the hard-boiled foreman, and N. M. Wahl, as the safety man, assisted by several clever confederates in the audience, injected life and fun into the proceedings. When "the meeting" was thrown open, these confederates leaped to their feet and "bawled out" the company because of the lack of goggles, guards, posters and the like, until foreman "Mike," a new convert to safety, began to call for help.

Every Human Life Priceless

The general chairman, C. R. Phenecie, president of the Fox River and Lake Shore Safety Council, introduced first William Hales, safety engineer of the Maryland Casualty Company, Baltimore, who spoke on "The Value of Human Life."

He said, in part: "A child is killed. A jury awards the parent $2,000. An aged man is struck down. This time the settlement is $70,000. Quite a range here, between $2,000 and $70,000; but who would be willing to sell his life for any figure?

"Human life is invaluable, in the home, in business, in statesmanship. Every life is priceless, somewhere. Loss of life, anywhere, means waste."

The speaker showed how skill, influence, parenthood and home may be blotted out by careless instruments. Eighty per cent of all accidents are preventable. This is the curse of the American situation. Mr. Hale showed how the safety movement in America is developing genius and momentum.

It was a top-notch speech. "Conference committees elsewhere," writes the Green Bay scribe, "will make no mistake in getting acquainted with Mr. Hale."

Safety Leadership

The second speech of the afternoon, by E. G. Finnel, consulting industrial engineer, of Chicago, was deep, meaty, and heart-searching. Mr. Finnel, told not one joke, yet held his audience to his last word.

"It is a matter of leadership," said Mr. Finnel. And he showed how the "safety movement," so-called, deals with the heart of industrial efficiency. "Workers can be led to want to do the thing you are asking. This is no 'Charge of the light brigade': 'Their's not to reason, Why.' Reasons must be given. Men must be appealed to on their 'dollar side' and through their emotions.

"You foremen do not produce anything," said Mr. Finnel. "Yet the whole burden of achieving production rests upon you. Foremanship, like leadership, is born in a man. Possessed of that gift you have the key to progress. The average firm in the United States is short-lived, nine and one half years. Over 41 per cent of American firms in 1928-29 paid no dividends. How can you, as a foreman, give your firm long life? Is your job like the coal which produces only heat, or like the coal of 275 bi-products, among which heat is the least valuable?

"Carefulness applies to quality of production, and enforces the sales advantage of your own firms. It is necessary that your firm, on the average, be assured of at least 12 per cent profit to insure it a break for life. Is your department having waste, break-downs, lack of purpose, all of which mean that you are ham-stringing your company?

"Oh, men," said the speaker, "To many of your employees you are God! Be as big, as courageous, as admirable as your opportunity affords, and so be the making of a bigger manhood, and insure a finer efficiency in your department!"

One would like to give attention to "The Parade," a new feature in the Fox River Conference. Led by high school bands, one champion of Wisconsin in the A-class, the other champions of America in B-class, both from Green Bay and vicinity, the American Legion, the Y.M.C.A., the railroads, leading industries and the service clubs, all carried the safety message out of doors in the late afternoon. It was a good showing, especially in respect to the School Patrol, lads trained to protect children on the streets.

Next year the conference goes to Fond du Lac, and one hour, the dinner period, was given over by volunteer executive committeemen, among whom paper and pulp men take a large place, to paving the way for the next Big Meet.

Companies Represented:

Gilbert Paper Company, Menasha; Bay West Paper Co., Green Bay; Hoberg Paper and Fibre Co., (30); Hudson-Sharpe Co., Green Bay; Falls Manufacturing Co., Oconto, (10); Marathon Paper Co., (6); Fox River Paper Co.; Nekoosa-Edwards Paper Co.; Stevens Point Paper Co.; Strauble Paper Co.; Thilmany Paper and Pulp Co., (30); Nicolet Paper Co., De Pere; Green Bay Barker and Machine Co.; Kimberly-Clark Mills, (40); Interlake Paper and Pulp Co., Appleton; Combined Locks Paper Co., Appleton, (11); Riverside Paper Corporation; Marinette-Menominee Paper Mills; Fort Howard Paper Co.; Northern Paper Mills, (24); Escanaba Paper Co.; Employers Mutual Insurance Company, Wausau.

"Safe Practice" Pamphlet Revision

In connection with the Fox River Valley Safety Conference, at Green Bay, Wisconsin, the National Safety Council, interested in the revision of the Paper and Pulp "Safe-Practice" pamphlet, asked a number of safety engineers to re-

main over a day, with George E. Burns, as chairman, to continue the work begun a month ago in a similar meeting at Wausau.

An all-day session was held Thursday, June 5, at the Hotel Northland. The Wisconsin Industrial Commission designated R. A. Keown, chief engineer, F. J. Finkbeiner, and Deputy Schreiber as its representatives. The Employers Mutual Insurance Company contributed the services of a veteran engineer, A. L. Martin. The Paper and Pulp Section was represented by R. M. Altman, chairman of the Paper and Pulp "Code"; Franz H. Rosebush, Nekoosa-Edwards Paper Company; H. D. Banta, Hoberg paper and Fibre Company; Messrs. Stringer, of Mosinee Paper Company, and Briggs, of Kimberly-Clark; Arthur Murray, of Chicago, interested in board mill problems; William Fitzgerald, pulp superintendent, and W. J. Peacock, Safety Director, Northern Paper Mills.

The method of revision is most painstaking. The former pamphlet, now out of date, is being read line by line, and revised to meet modern conditions. When the preliminary draft is completed it will be presented widely to paper men for their criticism, before adoption and printing.

After two sessions, each requiring a day, the work has covered about half of the pamphlet. With hard work it will probably be in shape for presentation at the section meeting in Pittsburg, October 1.

Kalamazoo Interstate Meeting

Technical and Cost Men Meet for Third Annual Event

THE third annual interstate meeting sponsored by the Paper Technologists Club of Kalamazoo and the Kalamazoo Valley division of the Cost Department of the American Paper and Pulp Association was held May 23 and 24, 1930 at the Park American Hotel, Kalamazoo, Michigan. Registration began on the morning of May 23, and when completed showed an attendance of 95. Fifty-one of this number were from outside of Kalamazoo.

FIRST DAY'S JOINT SESSION

The program beginning as a joint session at the noonday luncheon and extending through the banquet period on the following night included much material of direct as well as inspirational value to every one present.

Harry C. Bradford of the Rex Paper Company of Kalamazoo, presiding at the noonday luncheon and joint session on the first day's program introduced George K. Ferguson, president of the Watervliet Paper Company, as the first speaker on the program. Although representing the Cost Section, Mr. Ferguson welcomed all visitors from out of the Valley, congratulated the committee on the attendance at the first luncheon, and stated that the meetings offered an opportunity to be of service. He stressed the necessity of thinking individually, together with the demand for facts and the ability to apply them. He told briefly of the organization of the Kalamazoo Valley division of the Cost Department of the American Paper and Pulp Association, of the disappointments and the successes, and gave much credit to Harry C. Bradford for the success of the work.

Following Mr. Ferguson's remarks, Elbert G. Milham of the Bryant Paper Company, speaking for the Paper Technologists Club, seconded Mr. Ferguson's welcome and urged that every one in attendance take part in the meeting. He emphasized the value and the cost of such a meeting to the individual and to the company represented through him. Such a meeting, according to Mr. Milham, inspires more open-mindedness, and more honesty in relation to each other and to ourselves. It also develops confidence not only in others, but also in the individual professional activities and in the entire paper industry.

Saftey a Cost Factor

After the welcoming remarks, J. A. Purdy, director of safety of the Michigan Mutual Liability Co. of Detroit, Michigan, introduced by Mr. Bradford, spoke enthusiastically and interestingly on "Safety as a Factor in Reducing Costs." Frame of mind and lack of mechanical guarding create the cost of accidents, according to Mr. Purdy. He mentioned the birth of the safety movement in the country with particular reference to the National Safety Council. He stated that 15,000,000 workers in the United States were actively affected by safety work and that only organized effort could put such safety work across. It was the speaker's suggestion that the cost of accidents should be analyzed and the responsibility of this work placed upon the cost and technical departments, superintendent, foremen, management and employee. At least 70 per cent of the serious and fatal accidents in industry can be prevented in the opinion of Mr. Purdy. He placed the responsibility for carelessness on the managers, stating that too many of them just side-step the issue. Guarding machinery is important, but responsibility does not end there. It is up to the management to see that everything is done to eliminate accidents. Supervision of the new worker was stated to be absolutely essential. Knowledge of causes of accidents was stressed in discussing the cost of accidents. Cut out the cause, said Mr. Purdy, and you will cut out the cost of accidents.

Reference was made to accident records of twelve Michigan paper mills, records obtained during a good year from an insurance standpoint. These twelve mills had 500 compensable accidents which cost for medical attention and compensation approximately $100,000 or $200 per accident, $300,000 productive hours lost, and a cost to employees of approximately $160,000. Mr. Purdy stated that over the same period and in the same mills that about 5,000 accidents did not require compensation.

The speaker advised the cost men to ascertain the number of non-compensable accidents that occur in the plants where they are employed, and that they go more deeply into the cost of accidents. Emphasis was placed on occurrence of foot accidents, and the necessity of wearing shoes around machines.

In his concluding remarks, Mr. Purdy stated that no industrial company is too small for a safety organization.

Afternoon Sectional Meetings

Following the luncheon program, the afternoon was given over to sectional meetings with V. G. Hinemueller as chairman of the Technical section and Norman Cowie as chairman of the Cost section.

TECHNICAL SECTION

The afternoon session of the Technical section opened with a discussion on "Some Recent Jordan Experiments." This discussion was led by G. S. Brazeau of the Appleton Machine Company. A study to ascertain the effect of jordaning high density stock in a kraft mill was mentioned, as well as work in handling sulphite independently of groundwood where the two pulps are used in the furnish. A question was raised about the DeCew system of "jordaning" and brief opinions expressed. A suggestion was made to study fiber length, and changes made by the work done in the jordan.

Mr. Brazeau mentioned the work of the Forest Products Laboratory at Madison, Wis., in studying the so-called "Coarseness Modulus of Pulp." He stated that this work gives an index number to the length of fibers as they receive stock preparation treatment, and called attention to the fact that a four-step fracionating screen was used in this work. The impression was given that the Forest Products Laboratory has prepared a publication on this work of fractional screening, and that the Laboratory will be pleased to supply information to any one interested.

Another question raised during the discussion was the effect on hydration of bars of different materials. The uses of steel, stainless steel, monel metal and bronze were discussed.

Following the discussion on jordan experiments, the papers for the afternoon session were presented. These papers included "Corrugated, Smooth Pressed, or Shredded Pulp" by Roger J. Egan of Bulkley, Dunton & Co.; "Proposed Method for Determination of Water Soluble Materials in Finished Paper" by Dr. Th. Bentzen of the Whiting-Plover Paper Co.; and "Proximate Analysis of Technical Men" by R. G. Macdonald, Secretary of T.A.P.P.I.

Pulp Drying Methods

Roger J. Egan of Bulkley, Dunton & Co., opened the session with a paper on "Corrugated, Smooth Pressed, or Shredded Pulp." In the presentation of his subject, Mr. Egan mentioned the difference of opinion relating to the use of corrugated, smooth pressed, or shredded pulp. He expressed opinions of different mills in the use of this material, and gave information on the history and evolution of the various pulp drying methods. The first so-called shredded pulp, according to the speaker, was placed on the market in 1926. The various processes employed in pulp sheeting and drying were briefly described, also the use of a continuous screen-belt conveyor, similar to a fourdrinier wire except that it is about 14/16 mesh, for conveying shredded pulp through a drying chamber. The pulp manufacturer, said Mr. Egan, is interested in making the most acceptable pulp at the lowest possible cost, while to the consumer each type of pulp has its advantages and disadvantages which must be weighed if the pulp is to be purchased and converted most economically. He stressed the point that pulps will have strength curves according to how they are made regardless of how they are packed, gave figures to indicate cost of freight shipment of pulp to paper mill with pulps of different moisture contents. In concluding his remarks, Mr. Egan pointed out that manufacturers of pulp are constantly endeavoring to produce a pulp that will be most desirable to the paper mill, and that it was his belief that before many years pulp may be shipped in dry fiber form, baled like cotton.

Determination of Water Solubles

After a discussion of Mr. Egan's paper, Dr. Th. Bentzen, chief chemist of the Whiting-Plover Paper Company, presented his paper on "Proposed Method for Determination of Water Soluble Materials in Finished Paper." He explained the method which he employs in his work, emphasizing the use of redistilled water for the extraction, describing the equipment with precautions for setting-up, and method of distillation. With the redistilled water available, Dr. Bentzen suggests the following procedure in the extraction operation:

1. Weigh exactly 5 gr. air dry of the paper to be tested.
2. Fold it in ¼-in. width, zig-zag, then cut in ⅛-in. to 3/16-in. width strips and place these into a 400 cc. pyrex beaker (Cenco No. 1132).
3. Add 200 cc. redistilled water.
4. Bring to boiling in water bath and keep slowly boiling, evaporating until about 100 cc.
5. Transfer through filter into another 400 cc. pyrex beaker, tall form (Cenco No. 1136) graduated by weight of distilled water, with help of a triangular file (Cenco No. 5298) into 100 cc. intervals.
6. Wash the paper material upon the filter with redistilled water into the filtrate, until about 200-250 cc. total volume.
7. Place the beaker into the water bath, heat and evaporate until exactly 100 cc. volume, cool off and eventually correct the volume through adding redistilled water.

This procedure gives precisely a 5 per cent extraction of the paper, containing all of its water-soluble matters, and servicable for accurate quantitative, as well as for general qualitative analysis.

Importance of Vocational Analysis

The last paper presented during the afternoon technical session of the first day was "Proximate Analysis of Technical Men" by R. G. Macdonald.

Mr. Macdonald told of the industry's labor turnover of chemists, mentioned the economic loss due to incapable workers as an actual loss, and described the traditional methods of securing employees. One of the elements contributing to the unreliability of a personal interview, that of first impression, was discussed. A suggestion was made by Mr. Macdonald that the way to overcome the inevitable dangers and weaknesses of the general impression was to follow some definite rating scheme. He characterized introverts and extroverts, and referred extensively to the address of Ernst Mahler of the Kimberly-Clark Corporation before the American Paper and Pulp Association in 1928 when discussing the proper place for practical and technical men in a paper mill organization. He also described the work of the Merton system of vocational guidance and outlined the intellectual, social, and will or volitional specifics as indicated by this system.

Mr. Macdonald's paper concluded the technical section meeting for the first day of the convention.

COST SECTION

The sectional Cost meeting during the afternoon of the first day, held simultaneously with the technical meeting, included papers on "Insurance" by Harry J. Mowry; "Planning the Budgeting Future Costs and Sales" by Frank Brown; and "Depreciation" by H. C. Bradford.

Suggested Depreciation Forms

Discussing the subject of depreciation, Mr. Bradford submitted a Plant Ledger form which he recommended for use in an organization where there is a variety of equipment with depreciation at different rates, and no appraisal except at several year intervals. At the top of this ledger sheet is listed the account and depreciation rate. The sheet is ruled to show the following headings: date, memorandum and reference; then the investment value, which has a debit, credit and balance underneath; depreciation reserve, which has a debit, credit and balance; recovery value and profit or loss.

The Lapse Schedule was suggested by Mr. Bradford to be desirable for use in an industry where there are few changes and a small amount of clerical help, with an appraisal every few years and perhaps a continuous appraisal. It is much less work, and of course, cheaper to use than the Plant Ledger. This form is a sheet made out for each kind of equipment and the depreciation rate. The first thing on this sheet is the year, next the total additions for the year and the balance, and there is carried out after the balance the amount which should be depreciated for each year until the full amount paid for the equipment has been depreciated off or sold, and each year the additions are added and the new balance is carried out in the year in which it occurred.

BANQUET

An informal banquet was held Friday evening with E. F. Whittington of the Sutherland Paper Company presiding and G. S. Brazeau as toastmaster. Music and entertainment were furnished by Fisher's Globe Trotters of Kalamazoo, a musical organization that has made several world cruises.

The Story of Lead

Alfred Greene of the National Lead Company was the speaker of the evening and the subject of his address was "Romances in Non-Ferrous Metals." Lead, said Mr. Greene, is as old as the hills and nearly as old in its use by man. The Assyrians and Egyptians used it; the alchemists mentioned it in their writings and Moses mentioned it in the Bible. According to Mr. Greene, iron, steel and copper would not have many of their present uses if it were not for lead. In mentioning the uses of lead, he told of excavations of ancient cities in which lead pipe laid over 3,000 years B. C. was found, mentioned the lead shingles of various castles laid from 1553 to 1613, the lead gargoyles of Notre Dame, the turn spires of St. Sofia, the tomb of Rachel in Jerusalem and its replica erected by Andrew W. Mellon in Greensburg, Pa. in honor of his mother. Another interesting use of lead

mentioned by Mr. Greene was as a mattress for the steel of skyscrapers. Traffic has set up vibrations in the skyscrapers of New York to such an extent that in the erection of the new Chrysler building it was deemed advisable to set the first layer of steel upon a mattress of lead. Various other uses of lead in different fields of activity including pulp and papermaking, printing, fruit growing, automotive, paints, etc. were mentioned. Approximately 658,000,000 pounds of lead were used in automobile storage batteries alone during the year 1929. Reference was also made to the use of lead for impregnation of clothing worn by those subjected to the penetrating rays of the X-ray to eliminate danger to them. Other uses touched upon briefly included pipes for organs, artists pigments, cartridges, fishing tackle, prize cups and medallions. Mr. Greene's remarks on lead were concluded with a few brief remarks on the sources of tin and some of the difficulties involved in mining and transporting tin concentrates.

SECOND DAY

Saturday morning was spent in mill visits or golf. The mills which opened their doors to all guests at the convention included Bryant Paper Co., Hawthorne Paper Co., Kalamazoo Paper Co., Kalamazoo Vegetable Parchment Co., Rex Paper Co. and Sutherland Paper Co. The plant of the Paper Makers Chemical Corporation was also thrown open to visitors.

A luncheon and joint session was held Saturday as on the day before, with W. K. Kidder presiding. At this session, Mr. M. Krimmel, President of T.A.P.P.I., spoke briefly on the activities of the association and mentioned the interest of the organization in the work of the Kalamazoo Paper Technologists Club.

R. A. Hayward, manager of Kalamazoo Vegetable Parchment Co. spoke at this session on "Relation of Cost and Technical Men to Production Men." Mr. Hayward made a plea for more loyalty on the part of the employees of an organization; stated that more loyalty was needed, and that a clear understanding of the function of the organization was important. More careful reports on the part of the technical man were suggested. The individual who desires to get the most from his work in the opinion of Mr. Hayward should spend more time in analyzing himself and also in analyzing the work which he is doing.

TECHNICAL SECTION

The Technical section meeting for the afternoon included papers on "Construction of an Inexpensive Constant Humidity Room" by Max Bardeen of the Lee Paper Co., Vicksburg, Michigan, and "How to Test Paper for Permanence" by Dr. Jessie E. Minor, member of T.A.P.P.I.

An Inexpensive Humidity Room

Mr. Bardeen told of the problems encountered in physical testing of paper without a constant humidity room and from these problems concluded that if the physical testing and records were to be significant that it was essential to do the testing under satisfactorily controlled conditions.

Air conditioning equipment manufacturers' prices were higher than Mr. Bardeen felt justified to pay, and this fact necessitated the building of their own room. Mr. Bardeen claimed no originality for the room, nor for the equipment employed. He said that the work resulted from the successful experience of Kalamazoo Vegetable Parchment in the installation of a similar room.

The dimensions of the room were given as 16 ft. x 10 ft. x 7½ ft. or 1,200 cubic feet. The room was located in the plant where there were no outside walls, but was adjacent to the machine and beater room which developed some vibration difficulties. Special care was given to the construction of the floor and wall. The walls were made of plaster board and Masonite, with roofing paper and a dope to positively seal any undesirable openings. Humidification was obtained with a Bahnson master control while dehumidification was obtained with a water or tray cooler and a Frigidaire coil. Complete costs of the system were not yet available, but Mr. Bardeen approximated it at not over $1,200.

Testing for Permanence

The last formal paper of the technical section meeting was Dr. Minor's paper on "How to Test Paper for Permanence." Dr. Minor explained some of the complexities in testing paper for permanence and stated that the problem was tied in with raw materials, method of manufacture, and storage of the finished paper. She told of the work of the Rag Content Paper Manufacturers who instituted a central laboratory to study the durability of rag as contrasted with wood pulp papers. Literature investigation revealed that, while a number of workers have studied the effect of definite impurities in paper upon aging quality, little has been done towards a comparison of two such different fibers as rag and wood. Dr. Minor cited the work of Professor Maas of McGill University as reported in the Journal of the Chemical Society in March, 1930, on comparison of the relative amounts of water absorbed by spruce wood and cotton fibers at the same vapor pressure or relative humidity of the atmosphere; and quoted statements of Professor G. L. Clark, who in the last meeting of the American Chemical Society in Atlanta, Ga., said, "The principle ring for alpha-cellulose is double which means that in its preparation cellulose hydrate or mercerized cellulose has been formed and that the material is a mixture of changed and unchanged cellulose." Properties of cellulose hydrate were given, and comparisons on the effects of oven aging of papers. Besides the type of fiber used and the impurities in the papers, Dr. Minor said that decay may be the result of low resistance to impurities in the air or to light rays. Conclusions drawn on the work thus far indicate that a paper in order to be permanent should show in chemical and physical properties a high resistance to oven heating at a fixed temperature for purity to ultraviolet light rays for fiber stability, and to such atmospheric gases as sulphur dioxide for paper stability.

COST MEETING

Two papers were also presented before the sectional cost meeting, with Glen Ingling as chairman. These papers were, "Making Management Think" by George P. Ellis, of George P. Ellis & Co., Chicago, and "Ratios as a Guide to Management" by T. J. Burke, director Cost Department, American Paper and Pulp Association.

Management and Costs

Mr. Ellis in presenting his paper "Making Management Think" defined "thinking" by the business executive to be "the orderly and logical consideration of all ascertainable important facts, either directly or indirectly related to the business, for the purpose of determining what should be done that is not being done; what should not be done that is being done; and what is being done that is sound and should be continued." In continuing his remarks, Mr. Ellis emphasized the importance of keepink proper accounts and the presentation of accounting and statistical data to the executives responsible in such a way that it is easily and quickly understood. Information was also presented on the basic factors—demand, capacity of plant, availability of material, local labor conditions and financial requirements as they apply to the production program. Mr. Ellis endeavored to show throughout the presentation of his paper that the accountant's work, if properly conducted, will produce statistics, trends, and comparisons which should arouse the business man to study every phase of his business as well as the economies which underlie the whole fabric of business and, to a large extent, the whole accounting system; recorded facts which would be so analyzed and presented in such a manner as to enable the business man to go back and study the causes which produce the given facts and knowing the causes, he is in position to introduce the changes necessary to correct untoward tendencies.

Ratio

Mr. Burke in the concluding paper of the cost meeting discussed "Ratio as a Guide to Management in the Pulp and Paper Industry." Defining a "ratio" as a quantitative relation between two similar magnitudes determined by the number of times one contains the other integrally or frac-

tionally, Mr. Burke continued that the setting up and working out of ratios for an industry is work that can provide the "boot straps" whereby the industry can lift itself out of the morass of unprofitable business. He referred to a paper "A Basis for Evaluating Manufacturing Operation" prepared by L. P. Alford and J. E. Hannum and read last year before the American Society of Mechanical Engineers. In considering this paper, Mr. Burke stated that taking the paper and pulp group (50 companies as tabulated in their paper) they figured the wages per 1000 man-hours as $465, and the cost of materials per 100 man-hours as $1,760, making the total prime cost $2,225. The value added by manufacture was said to be $1,065 per 1000 man-hours, the overhead selling expense and profit being $600 per 1000 man-hours, while the value of product per 1000 man-hours was $2,825. In explanation, "1000 man-hours" are computed by totalling the number of hours worked by all employees and dividing by 1000.

Mr. Burke believes that such figures produced periodically by the Cost Department of the American Paper and Pulp Association would provide a real basis for evaluating the manufacturing efficiency of the various mills in each group. An analysis of the total costs and expenses of 44 mills for the first six months of 1928 made by the Cost Association were presented. The figures represented the ratio or percentage of various items to the total cost of manufacturing and selling the paper produced during that period. The report covered board, book, cover, sulphite bond, tissue, wrapping and writing. Manufacturing materials, supplies, wages and salaries made up approximately 70 per cent of the total in every group. The highest selling expense including advertising amounted to only 6⅔ per cent, while the lowest was just over 2 per cent.

From an analysis made at one time by the Cost Association of the sales dollar (figures based on data of 37 mills and on 1926 gross sales) it indicated that the average net profit by these 37 mills was 7.7 per cent, and that raw materials, supplies, and labor totalled about 71 per cent, while selling expenses amounted to 3.6 per cent.

Labor was said to be our second most important cost item. Past compilations, according to Mr. Burke, show that the average labor turnover in our industry varies between 40 and 50 per cent.

Mr. Burke also stated that he believed it a fair statement to say that **nearly a third of the corporations in our industry are losing money.** He based his belief on income tax returns for 1927 and 1928. It continuing his remarks, he stressed adequate financing of mills, and presented information on balance sheet ratios. In his opinion, each mill should compile a monthly, or better still, four-weekly statement of profit and loss, and also a balance sheet with respective ratios or percentages shown against the figures.

Figures were quoted from data of R. S. Kellogg of the Newsprint Service Bureau. Among these figures were included one per cent loss in typical wood pile may amount to 16 cents per ton on the paper it would have made; in two mills, one mill uses 3.3 times the number of men of the second mill for barking approximately the same quantity of wood; pulpstone costs ranging from 6 cents to 60 cents per ton of pulp, and that the total labor cost in an integrated mill is between $4 and $5 per ton of newsprint and about 8 man-hours per ton of paper, excluding electric and water-power labor.

In concluding his remarks, Mr. Burke emphasized the necessity of complete co-operation of members and stated that many administrative or management problems can be satisfactorily solved if proper ratios are developed to bring out necessary facts relating to them.

The dinner meeting, the last assembly for the third interstate meeting, was presided over by E. G. Milham with Carl Handy as toastmaster. Music and entertainment, as on the previous evening, was furnished by Fisher's Globe Trotters.

After a short but very interesting talk by Harry C. Howard, lawyer of Kalamazoo, the convention stood adjourned.

The committee for this interesting and helpful meeting consisted of E. F. Whittington, Sutherland Paper Co., chairman; E. G. Milham, Bryant Paper Co.; Glen Ingling, Kalamazoo Paper Co.; Max Bardeen, Lee Paper Co.; H. C. Bradford, Rex Paper Co.; W. K. Kidder, Allied Paper Mills; George Ferguson, Watervliet Paper Co.; Norman J. Cowie, Hawthorne Paper Co., and A. C. Dreshfield, Paper Makers Chemical Co.

The Consolidated Products Company, New York City, announces that George Cooney, who has had many years experience in designing and building of paper mill equipment, has been added to its staff, and will devote his entire time to serving the paper industry.

Blaw-Knox Co., Pittsburgh, announces the addition to its sales staff of John E. Chiquoine, who will develop an extensive line of welded and other Blaw-Knox process equipment for the chemical and process industries. Mr. Chiquoine has been connected successively with the American Chemical Machinery Co., as chief engineer, and with the Industrial Engineering Division of E. I. Du Pont de Nemours & Co.

E. G. Drew, representing the J. O. Ross Engineering Corp. and John Waldron Corp. on the Pacific coast, announces removal of offices to 311 Lewis Building, Portland, Oregon.

Hercules Powder Co., Wilmington, Del., announces that Geo. C. O'Brien, formerly assistant sales manager at the head office in Wilmington, has been appointed manager of the Chicago office of the naval stores department. J. C. Haile, who has been sales manager at the Chicago office, has been transferred to the main office of the company to take charge of special sales work.

Announcement from Blaw-Knox Company, Pittsburgh states that William E. Balliet has succeeded P. V. Kelly as manager of its Birmingham, Ala. office. Joseph Riley will become assistant manager of the district.

The Butler Paper Co. of Detroit, Mich., has been appointed an agent for Resistall linen ledger and Resistall bond, two of the papers made by the L. L. Brown Paper Co., Adams, Mass.

The Brown Instrument Co., Philadelphia, Pa., announces the consolidation of its Chicago sales office and midwestern factory branch in new quarters located at 155 East Superior street, Chicago, Illinois.

The Merco Nordstrom Valve Company, San Francisco, has opened an office in St. Louis for the purpose of serving the trade in that territory. It is under the management of Leonard J. Kanard and is located at 317 North 11th Street.

At a meeting of the directors of The Jeffrey Manufacturing Company, Columbus, Ohio, May 7, J. Frank Davidson, was elected vice president. Mr. Davidson has been serving as assistant general manager of the company, which office he retains. In addition to his position with The Jeffrey Manufacturing Company, with whom he has been associated since 1911, Mr. Davidson is a director of the Ohio Malleable Iron Company.

Brown Instrument Co. to Increase Plant

The steadily increasing demand for Brown Pyrometers, flow meters and other industrial instruments manufactured by The Brown Instrument Company, Philadelphia, Pa., necessitated additions to its plant in 1928 and 1929.

The continuing growth of the business having again justified expansion, the company has just let a contract for 40,000 sq. ft. of additional floor space to the Robert E. Lamb Co. of Philadelphia. This extra space will be in the form of two additional floors on all of the new two-story concrete sections of the plant.

New Catalogues, Books and Publications

The Brown Instrument Co., Philadelphia, Pa.—This company has just issued a revised edition of its electric flow meter instruction book, which explains the mechanism of the various types of Brown meters and recording instruments, gives instructions for installing the equipment, adjusting the instruments for zero readings and changing range tubes. Practical suggestions for avoiding difficulties, tables of correction factors for pressure, quality and superheat of steam are presented. Copy on request.

Boiler Engineering Co., Newark, N. J.—"How BECO Baffles Modernize Old and New Water Tube Boilers" is the title of a new bulletin just issued. Illustrations show how to baffle correctly all types of water tube boilers, horizontal and bent tube. It is claimed by the builders that in many instances old boilers are made more efficient than new boilers. The bulletin tells what to do and how to do it.

Farrel-Birmingham Company, Buffalo, N. Y.—New features of design of Sykes gear generators, illustrations of each size of machine and interesting examples of work generated are set forth in a new booklet just published. An insert gives a detailed description of the Sykes Gear-tooth Comparator, a very useful device.

General Dyestuff Corporation, New York City—This company has just issued a new color card showing a complete line of dyes adapted for surface coloring of paper and paperboard, known as G.D.C. No. 63, which will be of particular interest to manufacturers of colored paper specialties. All of the tints shown are lettered to indicate their fastness to light. There is also a diagrammatic sketch of an equipment for calender coloring calculated to be of excellent suggestive value in the rigging up of an apparatus for applying color to the paper sheet in its passage through the calender roll.

General Electric Company, Schnectady, N. Y.—Among the new publications recently issued by this company are: Industrial Control Catalogue GEA-606B which is a reprint of the industrial control section of the general catalogue 600-A; price lists GEA-1043A covering fabroil gears, and GEA-818A covering G-E Nonmetallic gears and blanks.

General Motors Truck Co., Pontiac, Michigan—A booklet entitled "National Motor Truck Analysis" is an analysis of returns from questionnaire sent out to truck owners nationally in September, 1929. Facts concerning the operations of more than 46,000 trucks of varied makes in all parts of the United States are given in the form of national averages and are also grouped by industries.

Gould Pumps, Inc., Seneca Falls, N. Y.—"The Centrifugal Pump," Bulletin 401, has been compiled for Goulds by F. G. Switzer, Professor of Hydraulic Engineering, Cornell University. This is in every respect a practical handbook of data valuable to the technical student, instructor, trained engineer and pump operator alike. One of the most interesting chapters in the book is that on testing, where the reader is taken through a modern testing laboratory and shown step by step how centrifugal pumps are inspected and put in perfect operating condition before they leave the factory. Copies upon request.

Link-Belt Company, Chicago—In the May issue of "Link-Belt News" is published a most interesting address given by Alfred Kauffmann, president of the company, before the Sixth Annual Convention of the National Association of Foremen on the subject "Some Trends in Industry." This number also contains a detailed account of construction that is now under way on the Central Main Power Co.'s dam on the Kennebec river. Another article, "The Home of 100 Acres of Merchandise" gives an excellent picture and description of the new Merchandise Mart in Chicago, recently completed, which is credited with being the world's largest building. This little magazine is published bi-monthly and all of the material is prepared within the Link-Belt organization.

Metropolitan Life Insurance Co., New York City—Two new pamphlets have been issued in the Industrial Safety Series being published by the Policyholders Service Bureau of this company. No. 6 outlines current methods of preparing and displaying safety advertising material as a means of keeping employees constantly informed of the importance of safe workmanship. No. 7 presents methods of stimulating employee interest in safety by developing the spirit of friendly competition or the desire to excel.

Palmer-Bee Company, Detroit, Mich.—A new conveyor catalogue just published by this company is intended to appeal to the man who wants to see close-up photographs of actual installations of interest to him and full size details of construction. In addition to the large number of illustrations, there are diagrammatic layouts for different types of conveying systems, and a considerable amount of descriptive text.

Stearns Conveyor Company, Cleveland, Ohio—This division of Chain Belt Co., Milwaukee, has put out a catalogue and engineering data book covering Rex-Stearns belt conveyors, which contains complete and specialized information on the designs and application of Rex-Stearns Timken Idlers for all types of belt conveyors, together with all allied and auxiliary equipment necessary for complete belt conveyor installation.

Sullivan Machinery Company, Chicago—Catalogue 83-R describes the Sullivan Vibrationless Portable Air Compressor as well as portable gasoline engine driven compressor which has recently been increased by the addition of a 66-ft. unit. Numerous photographs are shown illustrating the equipment as used in the field, in road building, engineering construction, quarrying, mining and demolition enterprises

United Conveyor Corporation, Chicago—"Steamatic Ash Conveying System" is the title of a booklet describing this product and is the first news on the subject that has been released by the company for publication. The Steamatic is a recent development in ash handling. It is a pipe line system in which its manufacturers claim to have overcome all objectionable features to such systems making it simple and safe. Among the published list of those who have already installed the Steamatic are two large and well-known paper mills.

BOOK REVIEWS

Material Handling Equipment—This new work by Edward J. Tournier, has recently been released by McGraw-Hill Book Co., Inc., New York City. The subject is one of interest to every engineer and production executive in the pulp and paper industry. The nature of the equipment employed varies over a wide range and should be designed to meet the specific handling problem at hand. The object of Mr. Tournier in preparing the manuscript for this book was to supply such individuals as are interested with information on the results of most frequently used mechanical handling devices in service, on the adaptation of these devices to different uses, and to indicate methods in selection of this equipment, as well as to serve as a guide to economical methods in purchasing. It is a book of 371 pages and in addition to an extensive treatise on the historical development of materials handling equipment and a discussion of a wide variety of mechanical handling problems is included one chapter on the specific handling of pulpwood and wood pulp chips. The price of this book is $4.00.

The Paper Industry of New Brunswick—In an attractively arranged 166-page publication containing 33 photographs, 10 sketch maps, and a general map in color, which has just been issued by the Department of the Interior, Canada, is given detailed information about the natural resources of the province of New Brunswick and the opportunities they present for an industrial activity very much greater than has hitherto been attained in that maritime country.

Of particular interest to readers of this periodical will be the section on pages 62 to 70 relating to the pulp and paper industry. Papermaking was first undertaken in New Brunswick in 1923, but rapid expansion in this and related phases of the industry has lately been much in evidence. A complete newsprint mill with an initial output of 250 tons daily has just come into operation at Dalhousie; a bleached sulphite mill has been completed at Beauly with a daily capacity of 150 tons; and the paper mill at Bathurst has had its capacity doubled.

This publication can be obtained from the Director, Natural Resources Intelligence Service, Department of the Interior, Ottawa, Canada.

Fact-Sheets of Industry—The National Vulcanized Fibre Co., Wilmington, Del., has inaugurated a movement in line with National measures for further improvement of prosperity. The first of a series of "Fact-Sheets of Industry" has just been published. This company has searched out new and useful facts from all the businesses which their goods and services touch; facts about what ingenious and alert men in those businesses are doing and finding out; and facts about their own products, services, organization and methods. Through this series they will make these facts freely available, not only to technicians, but to all intelligent workers everywhere. This company has suggested that other industries will do well to join in this plan, and invites correspondence concerning the movement.

The Finnish Paper and Timber Journal—The Finnish Paper and Timber Journal has this spring published an Annual Special Issue containing a number of articles and reviews dealing with various aspects of the modern woodworking industries. The value of the issue is enhanced by numerous illustrations, maps and diagrams. A comprehensive English section gives up-to-date information about developments in Finland, besides a number of historical notes on woodworking activities in the country. The special issue affords new evidence of the high standard of scientific research work that is being carried on within the Finnish woodworking industries.

Technical Association Papers—The thirteenth series of this volume contains the proceedings of the annual meeting of the Technical Association of the Pulp and Paper Industry held in New York February 18 to 20, 1930, together with the reports of committees and papers, as well as the discussions. There are 330 pages of text and a directory of members, and 94 pages of advertising. Included in the text pages is a valuable "Bibliography of Papermaking for 1929," with an author's index, compiled by Clarence J. West, chairman of the Committee on Abstracts and Bibliography. The price is $5 and copies may be obtained from the Technical Association of the Pulp and Paper Industry, 18 East Forty-first street, New York.

The award of achievement recently offered by the American Trade Association Executives for original and outstanding service to the public has been given to The National Automobile Chamber of Commerce. The award, a bronze medallion, portrayed "Progress through Co-operation." Co-operation—the most worthy endeavor of modern times and the hope of the future; in its greater aspects as between nations; in its lesser, as between philanthropic, business and industrial enterprises, as well as between individuals.

The Month at Washington

TRADE Practice Rules and Standards—Questionable business rules, adopted at trade practice conferences, and approved or received by the Federal Trade Commission, are now being reviewed to correct such mistakes as have been made in the past, says the Chairman of the Commission, in order to formulate new standards for trade practice rules. "The Commission is not infallible, and neither is any industry," says Mr. Ferguson, mentioning the Sherman and Clayton acts as landmarks that must be followed. He prophesied a time when unfair practices and unlawful agreements and combinations would be entirely obsolete, and added: "Let honorable and reputable business voluntarily abandon all that is unfair and unlawful, and the Commission can easily handle the crooks and rascals."

Unfair methods of competition in commerce are as old as commerce itself and have grown and multiplied with the growth and expansion of business. No industry is free from them. Like weeds they grow without cultivation and like weeds must be eradicated if the crop of legitimate business is to be harvested. The Federal Trade Commission has now been in existence for over 16 years. The right of the Commission to receive resolutions which do not condemn unfair methods of competition but condemn practices which are unsound and uneconomical, has been questioned. But the view is that this policy is sound and has been of great value, not only to the industries involved, but to the public generally. Many of these rules without restraining the free and uninterrupted flow of trade and commerce, without any tendency to monopoly, or in any way violating or evading the law, have eliminated useless, wasteful and unsound practices. They have promoted economic and business-like methods of marketing and distribution. But with a view to correcting possible past mistakes and for the purpose of setting new standards, the Commission is now reviewing its past conferences and rules.

And so in general we may look forward to the time when business will ultimately be conducted on the same high plane of professions and sports, when unfair practices and unlawful agreements and combinations will be obsolete, when goods will be sold on their merits alone, and success will depend upon ability, efficiency and service, supported by the integrity of the American business man and his love of fair play, on his desire to attain success by honorable and lawful means, or not at all.

Regrouping Department of Commerce—The complete regrouping of the bureaus and services of the Department of Commerce is proposed by the Parker Bill (H. R. 12405) now in the House. The department has grown by leaps and bounds to a total of 13 important bureaus and services in the last 26 years. There would under this regrouping be one undersecretary of commerce in charge of the so-called industrial or commercial group, including the Foreign and Domestic Commerce, Census, Standards, Radio, Mines and Patent Office; one secretary over the so-called marine bureaus, including Navigation and Lighthouses, Coast and Geodetic Survey, Fisheries, and Steamboat Inspection Service, and one secretary for commercial aviation.

Center of Population Moves Westward—The center of population of the United States will continue its journey of 140 years westward, preliminary figures of the Census Bureau show. The movement to California has been a potent factor in the progress west. At the last census the center of population was near Whitehall, Ind., and this year it should almost reach the State of Illinois. The first announced center of population in this country was in 1790 when the location was east of Baltimore. The center of population is based upon the balancing of a hypothetical weightless United States and the population, when closer to the center, does not have as much weight as when further from the point of balance. tI is because of this that the gains by California have so much weight in bringing the center westward. The rush to Florida some years ago, the oil boom in Oklahoma, all have some effect upon the shifting of the center. The center of population has been in Indiana for the past 40 years.

New Canadian Tariff—As a result of the most extensive Canadian tariff revision since 1907, rates on imports from the United States and other countries having no commercial treaties with Canada have been increased on 87 items and decreased on 82, while the British preferential rate is decreased on 270 items, including 216 made free. By reason of this increased spread British and empire trade is favored to a great extent. A total of 495 items are changed by the new tariff law. Under the general tariff, which applies to imports from the United States and other countries having no commercial treaties with Canada, the rates are increased generally.

Census of Manufactures—To what use can the Census of Manufactures figures be put? The mass of statistical tabulations are uninviting, but these cold figures have a world of significance and wondrous potentialities when studied and applied to business activities. Business men are growing more and more accustomed to consulting reports of the manufacturing census if they desire information on the growth of manufacturing in this country as a whole or with regard to the prosperity of individual industries. Lately, interest has centered particularly to the facts on individual industries. The wealth of such data is ample, as the Federal Government has been collecting this information since 1849. It shows the effect of changes in industry, such as the passing of the "whip" as the horseless carriage came in, the passing of the phonograph with the advent of the radio, etc. Census statistics for geographical areas often offer another important field of interest. It shows individual industries within the boundries of the more important cities. It shows centers of industrial importance, statistics for each kind of industry, the number of wage earners in any city, the number of breakdowns in industry, wages in any city, the number of breakdowns in industry, wages paid, cost of materials, value of products, etc.

Though the uses of the manufacturing census figures are limitless, there are three substantial uses to which they can be put:

(1) they reveal movements of industry throughout the country by disclosing new centers of manufacturing and relative decrease in the importance of already established centers, together with facts bearing upon the geographical location of individual industries and changes therein;

(2) they provide individual communities with facts pertaining to industrial growth or recession in their communities;

(3) they provide data of value in making market surveys.

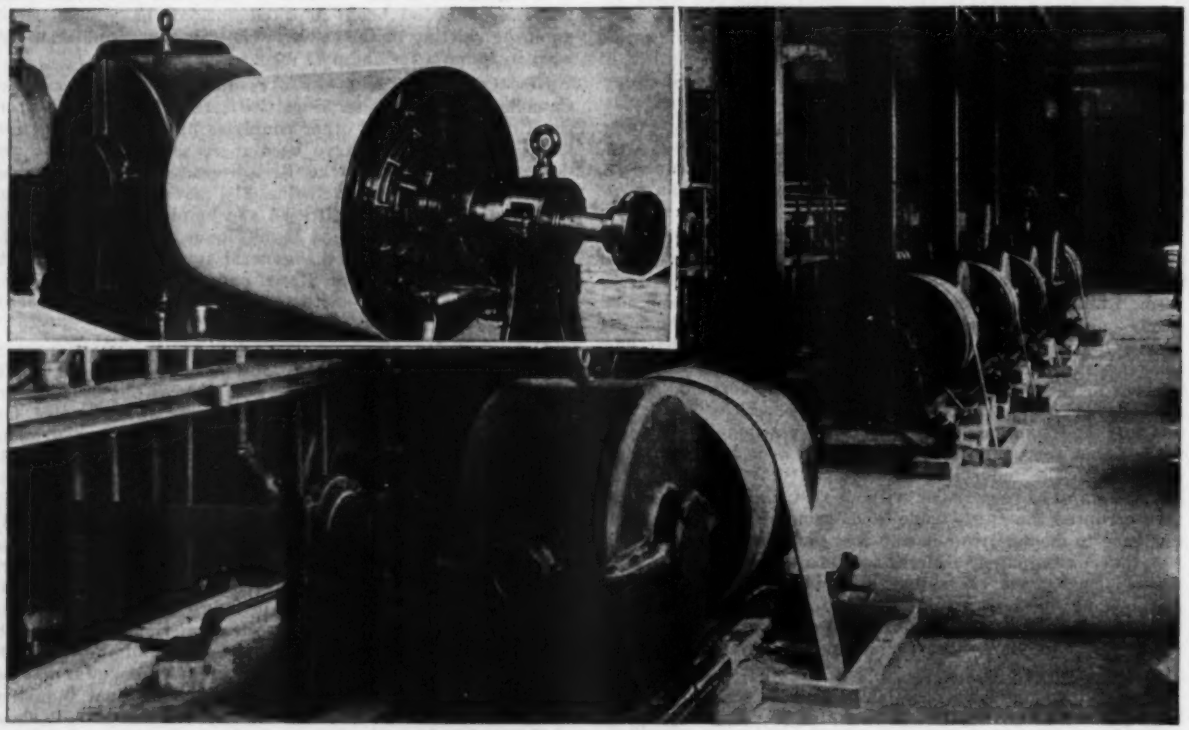
This information is of utmost importance in studies concerning plant location, industrial markets, sources of equipment and materials, seasonal fluctuations in business, outlets for new products, competition, and business methods generally. In the hands of a skillful statistical analyst, the figures reveal accurately and completely information which can be obtained in no other way.

Federal Trade Rulings—Trade practice rules of the wall paper industry, adopted at a recent trade practice conference, have been finally acted upon by the Federal Trade Commission. Eight rules condemning specific unfair methods of competition are arranged in Group I as pertaining to the following practices: false marking or branding of products,

Hyatts in Beloit Gear Drives

WHERE power savings, more dependable operation, steady speed, and lower maintenance costs are desirable in the processes of paper making, you will find free-running Hyatts at important bearing positions.

Enduringly they carry on in their appointed assignments . . . without interruption after years of unwavering satisfaction.



Battery of Spiral Gear Drives, on 234" Kraft Machines. These drives, built by Beloit Iron Works, have Hyatts in hubs of pulley and outboard bearing mountings.

Hyatt Roller Bearings have been placed in the floor drives of this installation to insure permanent shaft alignment, easier starting, and smoother running.

That Hyatt bearings are able to stand up unflinchingly under the most gruelling conditions is the best testimonial in their favor.

It pays to specify these better bearings for applications that call for the kind of performance that is built right into Hyatts.

HYATT ROLLER BEARING COMPANY

Newark Detroit Chicago Pittsburgh Oakland

HYATT

ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

deceptive statements as to grade or quality of products, defamation of a competitor, unlawful imitation of trade-marks or trade names, selling of goods below cost with the intent and with the effect of injuring a competitor, interference with a competitor's business through enticement of employees, obtaining information from a competitor concerning his business by false and misleading statements or by false impersonation of one in authority or by any method of espionage, and the secret payment or allowance of rebates, refunds, credits, or unearned discounts. Five rules accepted by the commission as expressions of the trade are designated under Group II.

A corporation selling and distributing paper products, signed a stipulation agreement (No. 467) with the Commission agreeing to stop using its corporate or trade name simulating the corporate name of a competitor and from using its name in any way so as to confuse the public into believing that its business and that of a competitor are one and the same. The corporation also agreed to cease and desist from using the word "mills" in its trade name since it did not manufacture the products which it sold.

Employment and Payrolls—The Bureau of Labor Statistics reports a very slight change in employment in May as compared with April, with an average of 87 per cent of a full normal force of employees working on an average of 95 per cent of full time. With 1926 as the basis of 100, we observe the following changes for

	Employment			Pay-roll totals		
	1929	1930		1929	1930	
	May	April	May	May	April	May
Paper and pulp	95.3	95.6	94.9	98.4	98.5	97.5
Paper boxes	92.9	90.6	89.3	100.8	96.3	93.2

Interstate Commerce Rulings—Rates on wood pulp board, in carloads, from West Nashville, Tenn., to Indianapolis, Ind., were found unreasonable and unduly prejudicial prior to March 25, 1929 but not thereafter, in a recent decision of the Interstate Commerce Commission (No. 21067), and reparation was awarded. Rates on the same commodity from West Monroe and Bastrop, La., to Terre Haute and Indianapolis, Ind., were found not unreasonable but unduly prejudicial and undue prejudice was ordered removed.

Recent Publication—"Paper Shipping Tags," simplified practice recommendation No. R-92-29, has just been issued by the Bureau of Standards, where a copy may be had upon request by interested parties.

Paper Containers Prove Popular—Paper bags are coming into wide use as shipping containers because of their desirable features, says the Bureau of Standards. The most common type is the multiple-wall bag, composed of kraft paper made water resistant by rosin sizing, and having a self closing valve through which the material is introduced, now in extensive use for cement and other similar materials, as it is economical not only in cost but also in respect to breakage and protection of the contents. There is considerable interest in the extension of the use of bags of this type to other materials which must have a high degree of protection from passage of moisture through the walls of the bags, among them sugar. Tests of sheathing papers, recently made by the Bureau, indicate there are papers available which are sufficiently impervious to air and which have the other necessary qualifications for bag use, such as strength, flexibility, water resistance and lack of odor. The test results of these papers are reported in Bureau Research Paper No. 82, available upon request.

Waste Paper Prices—Hundreds of tons of waste paper have been burned recently as a part of a campaign to inform the public that contrary to the prevailing understanding, such material is no longer of appreciable value as a raw product in the manufacture of paper, says the Paper Division of the Department of Commerce. Comparative market quotations covering identical periods in 1929 and 1930 reveal substantial declines in the value of old waste papers.

Large Forest Purchase—The purchase by the Federal Government of 422,737 acres of forest land at a total cost of $1,202,172 was recently approved by the National Forest Reservation Commission. This is one of the largest purchase programs approved in recent years. The areas acquired will be administered by the Forest Service with a view to the development of their full value in watershed protection, timber growing, etc.

Doings in Congress—The Senate has approved a bill (S. 3060) to establish a national employment system, and its final enactment into law is now up to the House. Two other unemployment measures, (S. 3059 and 3061) were also recently approved, one providing for adequate unemployment statistics and a long range Federal construction program. The first bill mentioned provides for a Federal employment system to co-operate with State agencies. The bill provides for the creation in the Department of labor of a bureau to be known as the U. S. Employment Service, which will publish information as to opportunities for employment by maintaining a system for clearing labor between States and establishing uniform standards, policies and procedure and by aiding in the transportation of workers to points for obtaining employment. The Bureau is also to formulate policies and solve problems relating to unemployment. A nation-wide employment service will thus be set up which it is hoped will solve to a large extent the unemployment problem.

Congressman Wood introduced a bill in the House (H. R. 12308) to provide for the construction of a mill to manufacture distinctive paper for United States Government securities.

The House is about to vote on the bill (H. R. 995) to create in the Department of Labor a Bureau of Safety, same having been placed upon the union calendar No. 356).

◆ NEW YORK CITY ◆

International Has Deficit for Quarter

A deficit of $1,552,147 after payment of preferred and Class A. common dividends is reported by the International Paper and Power Company for the first quarter of 1930. Net profit for the period after depreciation, interest, amortization, minority interest and dividends on preferred and minority common stocks of subsidiaries was $670,054, compared with dividend requirements of $2,222,201.

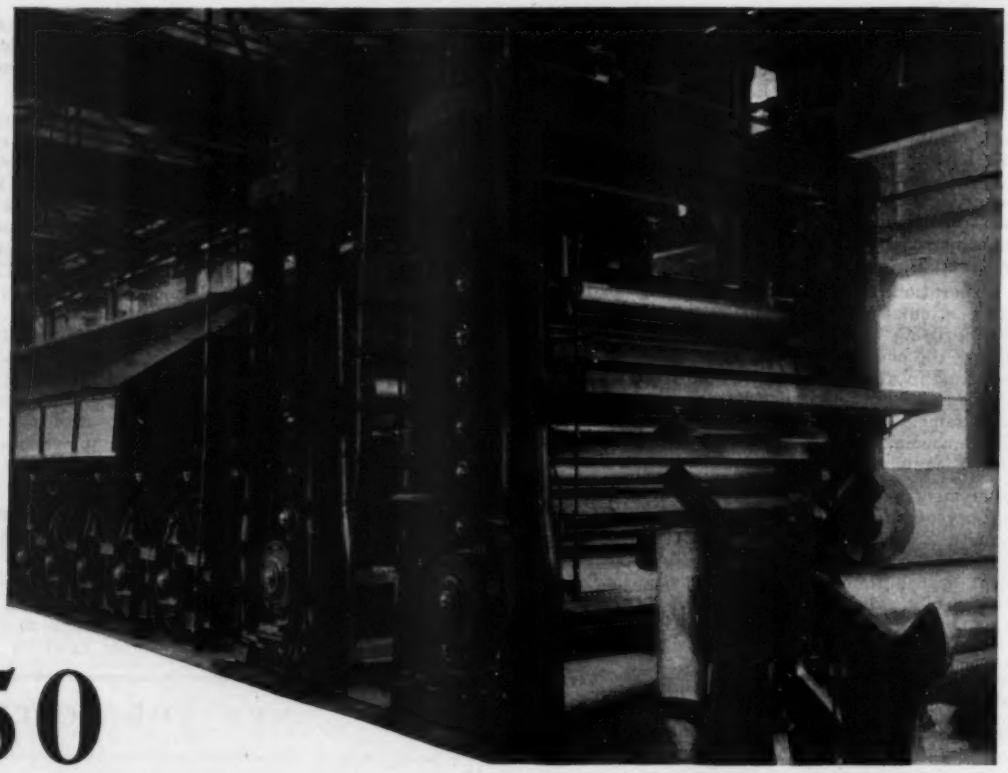
Commenting on the statement, Archibald R. Graustein, president, said:

"The balance available for dividends, though greater than a year ago, is not as large as had been expected prior to the development of the present business depression. Slackening consumption and declines in prices have affected earnings adversely. On the other hand, the progressive improvement in mill efficiencies is keeping pace with or exceeding expectations and promises to continue, indicating further increases in earnings which should be accentuated in the last quarter with additional deliveries of hydro-electric power now under contract."

The earnings for the first quarter of this year were 39 per cent greater than in the same quarter last year when the net above charges but before dividends was $480,422. The deficit after dividends in that quarter was $1,720,659. The development of the company's power income has been such that it has recently been announced that at present more than one-half of its net revenues, which in the last quarter were $10,454,495, are derived from this source.

Wall Paper Rules Issued

Thirteen regulations governing practices in the wall paper industry are included in a list of trade practice rules approved by the Federal Trade Commission and received at the headquarters of the Wall Paper Association in New York City. The rules include all of those approved by the industry last February at a trade practice conference held in New York over which Commissioner C. W. Hunt presided. Eight rules are listed in Group I, which covers practices regarded by the Commission as unfair methods of competition in violation of the law. They cover false branding or marking of products,



850 Timken Bearings *in this* Beloit Paper Mill

Efficiency in modern paper production is rapidly becoming synonymous with Timken Bearing Equipped paper mills.

The mill illustrated, built and installed last year by the Beloit Iron Works, Beloit, Wisconsin, is one of the most recent examples of Timken's great forward sweep in the paper industry.

There is a total of 850 Timken Bearings in this mill, assuring to the owners the characteristic benefits of the exclusive combination of Timken tapered construction, Timken positively aligned rolls and Timken-made steel at the vital points where they are applied. That means dominant control of all radial, thrust and combined loads; elimination of friction; power and lubrication economies and correspondingly low maintenance costs.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

defamation of a competitor, unlawful imitation of trademarks or trade names, selling goods below costs, enticement of employees, secret rebates, obtaining information from a competitor by false or misleading statements, and deceptive statements or advertisements as to the grade or quality of products.

More than 90 per cent of the wall paper industry, according to E. D. Belknap, executive vice-president of the Association, has subscribed to the rules.

Offices of A. J. Moran & Company, Inc., dealers in paper manufacturers' supplies, have been moved from 100 Hudson street, New York City, to 30 Main street, Brooklyn, N. Y. Mr. Moran is the popular secretary of the New York Association of Dealers in Paper Mills' Supplies, Inc., and is also a director of the National Association of Waste Material Dealers, Inc.

The New York City offices of The Leshner Corporation, dealer in and importer of paper mill supplies, have been moved to new rooms on the same or twelfth floor of 277 Broadway, New York, where larger quarters are occupied which provide a beautiful view over City Hall Park.

The Schaffer Paper & Twine Company, Inc., paper jobbers of 328 West Forty-first street, New York, has filed notice of a change in name to the Charles H. Schaffer Corporation.

A petition in bankruptcy has been filed by William A. O. Weber, paper mill engineer of 38 East Fiftieth street, New York, giving liabilities of $99,707 and assets of $1,000. The principal creditors listed are James B. Morris and Fitzhugh C. Speer, $56,000, secured by stock of the Weber Industrial Paper Company, and the Whitehall Bank, Whitehall, Md., $9,000.

The Bluavelt-Wiley Paper Mfg. Company has moved to 65-69 Bleecker street, New York, where larger quarters are occupied and where the new telephone numbers are Spring 4173 and 4174.

William Steck & Company, Inc., dealers in and importers of papermakers' supplies, have moved into new and larger offices in the Park Row Building, 15 Park Row, New York, in which building they have been located heretofore.

Offices of the Sterling Mill Supply Company, Inc., dealer in paper manufacturers' supplies, have been moved from 177 South street to the company's building at 146-148 Wooster street, New York City.

A. Price & Son, paper merchants of 97 Prince street, New York City, have taken additional space in the building adjoining the one they now occupy, which has been fully equipped with new shelving and other equipment for the storage of a larger stock of fine papers in which the firm specializes.

The Aldine Paper Mills, Inc., paper merchants and mill representatives of 333 Hudson street, New York City, have changed their name to the Aldine Paper Company, Inc., according to notice filed with the New York Secretary of State.

Robert B. Wolf, president of the Pulp Bleaching Corporation, of New York City, and widely known in the paper industry, has been honored by being elected a director of the Merchants' Association of New York. Mr. Wolf for several years has been actively identified with the association's activities, having been chairman of the association's committee on Industrial Relations. He formerly was assistant to the chief engineer of the Union Bag and Paper Corporation, and made plans for the pulp mill of that company at Hudson Falls, N. Y., later becoming superintendent of the mill. Later he was associated with the Burgess Sulphite Fibre Company in Berlin, N. H., and during the war was staff assistant to Vice-president Piez of the United States Emergency Fleet Corporation.

◆ NORTHERN NEW YORK ◆

Union Bag and Paper to Discontinue Manufacture

Union Bag & Paper Corp. has sold to Niagara Hudson Power Corp. the 50,000 shares of common stock of the Union Bag & Paper Power Corp., owned by it, for a sum sufficient to retire all present outstanding bonds of the latter company, which were guaranteed principal and interest by Union Bag & Paper Corp., and to pay off all the Company's bank loans. In addition, Union Bag & Paper takes back from Niagara Hudson a long term-power contract. Sale of Union Bag & Paper Power Corp. stock carries with it the water-power rights at Hudson Falls, N. Y., and the pulp mill on the Pacific coast. The statement of Union Bag & Paper Corp. says:

"With the great increase in the capacity for production of kraft pulp and paper in this country and abroad—which has resulted in extremely low selling prices—Union Bag & Paper Corp. has found it more profitable to buy its paper requirements in the open market. Directors have approved the policy of greatly reducing the manufacture of paper and of confining the company's activities to the conversion of paper into bags and sacks and the development of its bag business. Union Bag & Paper Corp. sells approximately 20 per cent of the entire quantity of bags used in the country.

"The paper mills at Hudson Falls will be retained so that the company may at any time manufacture its requirements of paper provided changes in market conditions warrant. Its paper mills have been written down in the company's books to figures very substantially below replacement values.

"Sale of the Union Bag & Paper Power Corp. stock will relieve the Union Bag & Paper Corp. of fixed charges and expenditures in excess of $400,000 annually."

Babson Acquires Control of A.P.W. Paper Co.

According to newspaper reports from Albany control of the Albany Perforated Wrapping Paper Co., one of the largest concerns of its type in the United States, has been acquired by Roger W. Babson and his American Public Welfare Trust, of Babson Park, Mass. It was reported that William A. Wheeler, president of the company, has sold his entire interest in the company to the Babson firm and that the presidency will be taken over by Seth Wheeler, present vice-president. Dwight G. W. Hollister of Wellesley Hills, Mass., a Babson company official, will be the vice-president, according to the report. With the exception of Messrs. Wheeler and Hollister, no change will occur in the executive department.

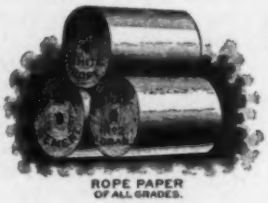
Albany Perforated Wrapping Paper is capitalized at $1,440,000. Capital stock is 156,000 shares of no par value common. The company specializes in the manufacture of paper towels and toilet tissue.

Frank W. Warren of Paris, France, technical expert on the manufacture of pulp and paper, recently visited his brother, John J. Warren, Brownville paper manufacturer. Mr. Warren said that business conditions in France are good and business steadily improving but that the pre-war normal has not been reached. He is the Paris representative of the Canadian International Paper Co. and of the Riordan paper interests of Canada. He has been visiting a number of the paper mills and plants of allied industries in this section.

A number of the large creditors of the Unity Paper Mills, Inc., of Potsdam will soon submit a plan of re-organization, according to the report of Bernard Wade and Arthur H. Martin, receivers, on file in United States court at Utica. Upon their request through Attorney Frank L. Cubley, Judge Frederick H. Bryant postponed adjudication of the company

THIS LETTER TELLS WHY

M.A. THOMAS, Pres't. H.L. BROOKS, Vice Pres't. E.C. WOODWARD, Sec'y & Treas.



ROPE PAPER OF ALL GRADES.

THE WARDLOW-THOMAS PAPER CO.

MANUFACTURERS OF

ROPE & MANILLA PAPERS.

Middletown, O. November 7, 1929.

Penberthy Injector Co.,
Detroit, Mich.

Gentlemen:-

Attention: Mr. G. E. Norton.

We are in receipt of your letter of Nov. 2nd. addressed to attention of Tom O'Flynn. The writer wishes to personally answer this communication as there are some things which I wish to state at this time that I prefer to have over my own signature.

The Penberthy installation on our No. 1 Machine has been completed and the result obtained from this equipment is very gratifying. The writer feels that it is producing very close to 100% efficiency. After the installation of the combination pressure and vacuum gauges, the result shown is as follows:

Average vacuum in heater line ranging from zero to 5".
Pressure in dryers ranging from 1" vacuum to 2½# pressure.
Dryers at wet end of machine cold, and operating as the writer feels they should operate.
Paper coming from the machine entirely satisfactory.

Since the completion of this equipment, we have run both extremes of our production, drying the largest and smallest tonnages which we make, equal satisfaction having been obtained in both directions, therefore it would be impossible for us to over-praise the equipment which you have installed for us.

The question now arises, is it possible to get an equally satisfactory result on our other machine? We would be pleased to have your representative call at his earliest convenience giving us quotation and lay-out for this machine which contains 17 drying units. Please advise by wire when it will be convenient to see the writer as he expects to leave town on next Tuesday.

Yours very truly,

THE WARDLOW-THOMAS PAPER COMPANY.

H L Brooks V.P.

PENBERTHY PAPER

ADVERTISING PAGES REMOVED

in bankruptcy until July. The company is being operated at a profit, according to the report. Counting a gain of $4,165 in inventory to $39,077, the company made a profit of $1,831 in April. Sales were $22,730 and costs $19,733, leaving a net of $2,997. This plus the inventory gain made a total of $7,161 from which other expenses of $5,331 were deducted, leaving the profit of $1,831.

The Junction Mill Supply Co.'s plant at Skaneateles Junction was recently destroyed by fire with a loss of about $10,000. The mill, which was operated by Gus Holm, supplied rags and papers to paper mills.

Ben V. Weissenburg, who has been employed by the Dexter Sulphite Pulp & Paper Co. at Dexter for the past two and a half years, has resigned and has returned to his home in Finland.

Thousands of cords of pulpwood have been driven down the Indian river to Philadelphia, N. Y., from the Copley tract. The long timbers are being reduced to pulpwood size at Philadelphia for shipment by train to the Island Paper Co. mill at Carthage, owners of the wood. Final logging operations for the Carthage firm were conducted last winter in the Copley tract. Much of the wood was sent by truck.

The plant of the Hinde-Dauch Paper Co. in Watertown, employing 100 hands closed on May 9 indefinitely. The plant has been in operation in Watertown since 1916 when Hinde and Dauch took it over. It had formerly been owned by the J. M. Hahn Co. of Cleveland, O. It has been turning out 110 tons of container board daily. Shipments have been made to box plants of the company in the east at Boston, Brooklyn, Philadelphia, Pa., and Baltimore on the Atlantic seaboard and to Cleveland and Sandusky, O., in the midwest.

Papers permitting the merging of the Algonquin Pulp & Paper Co., Inc., with the Algonquin Paper Corp. have been filed with the department of state at Albany. The company will continue to do business under the name of the Algonquin Paper Corp., and will maintain its principal business office in Ogdensburg.

❖ MICHIGAN ❖

Bryant Paper Co. Opens New Finishing Room

Production in the new finishing room of the Bryant Paper Company started May 22nd, when paper first passed over one of the huge super-calenders. The cutting machines were then moved to the new department, preparatory to the concentration of all operations in that division.

The next step will be to move the Bryant box and shipping case shop to its new quarters. The rebuilding of the No. 10 machine in the Milham division is going forward rapidly. This entire program as above indicated represents an outlay of approximately $750,000 and will effect very decided reductions in costs. The finishing room, designed by V. D. Simons and one of the finest in the country, is of steel and concrete, high, airy and with the finest natural lighting facilities. The floor is constructed of blocks, placed on end and assuring long years of constant wear.

Two super-calenders have been installed, each capable of handling a sheet of paper 154 inches wide. They are the product of the Textile Finishing Machinery Company, electrically driven and ball bearing throughout, requiring little power to operate in proportion to their huge size. Each super-calender is equipped with a Cameron winder. Another piece of equipment in this room is a large Hamblet cutter. The heavy rolls of paper will be handled by five-ton traveling crane, manufactured by the Milwaukee Electric Crane and Hoist Company. This crane is electrically driven and operated by one man.

The completion of the finishing plant will give this concern a large amount of space for the storage of manufactured product. The loading dock, running along the entire south side of the building, has been greatly improved by being roofed in, thus making it possible to load cars either in rainy or snowy weather. The No. 10 machine in the Milham division during the process of rebuilding will be transformed from a Harper type to a fourdrinier. A new Beloit wet end has been added, as well as a large number of dryers. The machine will run from 600 to 700 feet a minute and insure double capacity in output. An important and recent addition to the production department of the Bryant Paper Company is W. B. Clements, who comes here as manager of the production department. He is from the Fitchburg Paper Company, Fitchburg, Mass., where he has established a reputation as a maker of fine book papers.

The Michigan division of the American Pulp and Paper Mill Superintendents Association held its May meeting at the Columbia hotel May 15th. W. A. Sooy, secretary of the Michigan Carton Company, Battle Creek gave a very interesting talk on "What is Humidity and Its Effect on Paper and Printing?" This is the last meeting of the season.

❖ WISCONSIN ❖

Industry Active and Mills Maintain Operating Schedules

Quiet conditions prevail in the paper industry of Wisconsin but most of the mills are operating on a reasonably consistent schedule. The number of orders booked ahead does not compare with a year ago, due to the caution in the buying market at this time. Some mills are operating on a day-to-day basis because of the hand-to-mouth buying but are managing to keep their crews occupied. Manufacturers expect this lull to be prevalent most of the summer, but look for a decided upturn in the fall. Paper mill centers of Wisconsin have felt the business depression less than most other industries because the mills have been able to give steady employment to the major portion of their crews.

Building programs and expansion are far behind the record of a year ago, nevertheless there is plenty of activity looking to increased business in the future. Increased capacity in the beater department will be provided by the Kimberly-Clark Corporation at its mill at Kimberly through the erection of an addition 55 by 70 feet in size. It will be one story and of reinforced concrete and brick. Bids have been sought on the project with the idea of starting it at once.

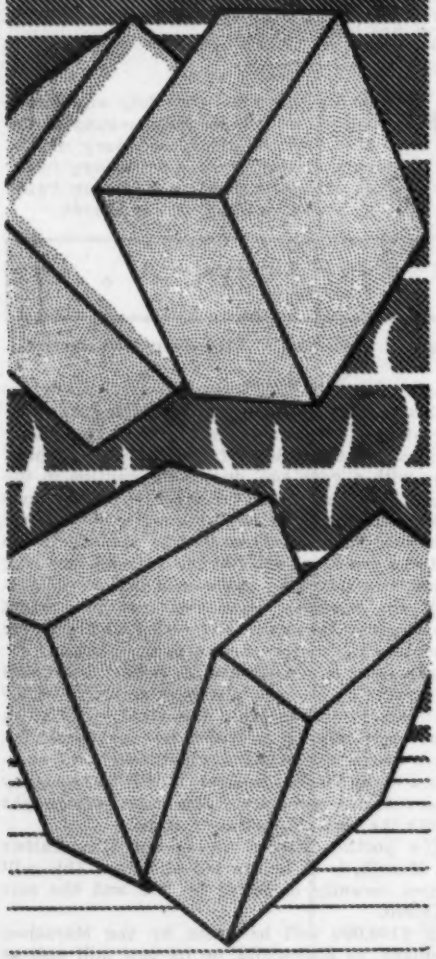
Rebuilding of a portion of the mill of the Grandfather Falls Company, Merrill, is to be started at once. This will include the section recently damaged by fire and the cost will be about $15,000.

Approximately $100,000 will be spent by the Marathon Paper Mills Company, of Rothschild, on its new mill unit at Ashland, this figure to include the equipment as well. The addition will be made to the finishing room, and will be fireproof, and one story, 100 by 124 feet in size. Congestion in the finishing room has made this step necessary, since the mill production exceeds the capacity of the cutting, embossing and folding departments. The company is developing its imitation linen tablecloth and napkin specialty considerably and will add machinery for this work. About 7,000,000 tablecloths and napkins are to be produced daily. Nearly 50 persons will be added to the crew when the new building is ready.

In order to improve the water supply and assure a uniform quantity, the Nekoosa-Edwards Paper Co., with mills at Port Edwards and Nekoosa, is building a pipe line costing $300,000. Thirty-inch mains laid for a distance of 19,000 feet will bring water from Nepco lake to the Nekoosa mill to the amount of 18,000,000 gallons daily. It will be necessary to run the main across the Wisconsin river. Sometime ago the company built a dam which impounded the waters now known

PENETRATION

BRINGS YOU INCREASED PROFIT AND PRODUCTION



An inquiring chemist took two six-inch cubes of spruce . . . placed them in similar containers . . . subjected them to sulphurous acid under identical pressure.

The sole difference was in temperature . . . the acid in one container was at 60°F,—170°F in the other.

At the end of a half hour the cold acid had penetrated its cube one-quarter of an inch,—*the hot acid had penetrated its cube to the center!*

And that, basically, is the reason for the remarkable increase in production and profit effected by the CHEMIPULP PROCESS.*

Sulphurous acid is introduced into the digesters at an initial average temperature of 170°F . . .

Cooking and penetration start *immediately!* . . . the equivalent of two and one-half hours increased cooking time is obtained in the same cycle now employed, or the cycle can be shortened two and one-half hours and the same or better quality be obtained, saving fuel and steam and increasing digester yield . . .

Chips are uniformly penetrated . . . better conditioned . . . without regard to their position in the digester . . .

The quality of the cooked pulp is much higher, with a considerable reduction in screenings and a high increase in strength and folding tests in the finished paper . . .

And this will interest you . . . economies and increased production *pay for the system in twelve to eighteen months!* We'll be glad to show you facts and figures.

CHEMIPULP PROCESS, INC.

CHEMICAL PULP MILL ENGINEERS

WOOLWORTH BLDG. **WATERTOWN, N. Y.**

Pacific Coast Office, 1017 White Bldg., Seattle, Wash. Canadian Agency, 319 Castle Bldg., Montreal, Que.

*THE CHEMIPULP PROCESS—a revolutionary process for the recovery of hot SO_2 gas and liquor and its efficient re-utilization through the digesting system *under high initial temperature and pressure.*

as Nepco lake. One of the purposes at that time was to use the water for the mills because of its purity. A pipe line built at that time has been supplying 12,000,000 gallons to the Port Edwards mill.

Construction has nearly been completed on a warehouse for the newly organized Allan Waste Paper Co., Menasha. The building is a two-story fireproof structure costing $10,000 and will be used for assorting and storage. Fred Rosenthal is to be manager of the new company.

Conditions of a less favorable nature are prevalent in two companies. Steps have been taken to liquidate affairs of the Wisconsin Carton Co., Stevens Point. Assets are to be sold on a court order after receiving sealed bids covering equities in machinery, raw materials, office equipment and other property. This concern was of recent origin, and remodeled a tractor factory at Stevens Point for a carton factory. One unit of printing equipment for multi-color work was installed. The receiver is L. P. Moen.

Appointment of a bondholders protective committee consisting of F. E. Ballister, K. S. Dickinson and M. D. Smiley, bankers and investment men, is being arranged in connection with the receivership of the Tomahawk Pulp and Paper Co., of Tomahawk. This company suspended operations several months ago and the mill is closed down indefinitely. First mortgage bonds bearing 7 per cent interest were issued several years ago through the First Trust Company, Appleton. The total issue was $200,000. It is contended that the company did not make good on its trust agreement to keep a required ratio of quick assets to current liabilities, and also did not meet its sinking fund requirements. The protective committee is empowered in its agreement with the bondholders to operate the mill if that seems advisable in their interests. The Wisconsin Valley Trust Company, of Wausau, is the receiver, and A. L. Kreutzer personally is supervising the steps to re-establish the mill.

Safety results are improving constantly at the Consolidated Water Power and Paper Co., Wisconsin Rapids. The branch mill at Biron has completed three straight months without a lost time accident, and the Interlake mill at Appleton has two months to its credit. The main mill had one lost time accident during that period which prevented a perfect record.

Fireproof equipment, added room and greater efficiency have been brought about in the store room of the Consolidated Water Power and Paper Co., Wisconsin Rapids, through the complete remodeling of this department. Iron beams and supports have been substituted for the wooden ones, and the wooden floor has been replaced with concrete. Wooden storage bins have been removed and steel shelving, drawers and bins have been installed throughout. Arrangement of the stock has been carried out with the idea of saving time and steps in mind. The company finds itself with more storage room in less floor space than before.

Whether the Combined Locks Paper Co., Appleton, can serve as a public utility and serve its industrial village of Combined Locks with electric current is a question the Wisconsin Railroad Commission is about to decide. A three-cornered controversy has arisen, with the Wisconsin-Michigan Power Co. and the municipal electric plant of Kaukauna as the other parties. Hearings are to be held to determine who shall supply the power.

Instruction of paper mill workers, foremen and safety groups will be conducted next fall on a larger scale than ever before, according to plans now in the making by H. G. Noyes, paper mill co-ordinator of the Wisconsin Board of Vocational Education. Each mill will have a class in paper and pulp making if the company or the workers so desire, and training of foremen will be conducted in mill schools and evening schools also. Safety courses will be offered in each paper mill city. The program this year covers every paper mill city in Wisconsin if the classes are wanted.

Institute Receives More Gifts

The Institute of Paper Chemistry at Lawrence College, Appleton, Wisconsin continues to receive gifts. Recent announcement has been made of another fellowship gift, carrying an annual stipend of $500 which is the gift of Harold T. Edgar of Edgar Brothers Company, clay manufacturers with head offices in New York City. This fellowship has been awarded to Edward H. Voigtman effective with his graduation from the University of Wisconsin in June. Mr. Vogtman has been honored because of his excellent undergraduate record in the college of engineering of the University of Wisconsin. He will enter upon graduate study at the Institute in September.

Another gift to the Institute—$5,000 from E. I. du Pont de Nemours and Company of Wilmington, Delaware—has just been bestowed.

Late news from the Institute states that a problem course consisting of a "Seminary in Human Relations in Industry" will be offered next year as another part of its program of relating college education to industry. The course which is offered jointly by the departments of Economics and Business, Psychology, and Sociology, will consist of regular round table discussions headed by a group of professors from the college and a group from the staff of the Kimberly-Clark Corporation under the general chairmanship of S. F. Shattuck, a vice president of Kimberly-Clark, in charge of the department of personnel.

Traffic Items

Freight rate and tariff matters are constantly in the forefront of paper manufacturing in Wisconsin. The application of the Canadian railways and the Eastern United States lines to obtain increased rates on newsprint will be opposed because it is believed an eastern raise will mean higher rates for the middle west also. Railways of the latter section have observers at the eastern hearings.

The Green Bay Traffic Association will assist in the case now before the Interstate Commerce Commission dealing with a revision of rates on paper products from the Fox River Valley to points in the south and southwest. The association has been allowed to intervene in the case, which is brought by the Wisconsin Paper and Pulp Manufacturers Traffic Association against the Chicago and Northwestern Railway. It is contended that rates are unreasonable, unjust and discriminatory in favor of shippers in west coast states. Shipments exclusive of wood pulp aggregate 630,000 tons a year. A hearing was called on the matter for June 2, 1930 at Kansas City, Mo.

Manufacturers also are opposing vigorously the tendency of congress to keep liquid wood pulp on the free list. They desire a tariff of 10 per cent in order to equalize costs with mills at Madawaska, Me., which have a pipe line from Canada and thus save the cost of converting the pulp back to liquid form. The Maine mills save $7 to $8 a ton, thus gaining a big advantage over other manufacturers. It is contended by C. G. McLaren, forester for the Tomahawk Kraft Paper Co., of Tomahawk, that unless the tariff is enacted it will mean extinction for kraft mills. The amendment proposing the tariff was withdrawn because the senators from Maine were divided on the issue.

The last possible barrier to extensive federal forests in Wisconsin has been removed through action of the National Forest Commission, Washington, D. C. This body has ordered that all options be taken up and that purchases be made of areas totalling 151,680 acres. In addition to 44,000 previously acquired in the Moquah national forest, the tracts include: Oneida county, 26,880 acres; Vilas county, 17,280 acres, and Forest county, 107,520 acres. Immediate fire protection will be provided under direction of Earl W. Tinker, United States forester for this district. Roads, fire lanes and trails will be built so as to provide breaks which will keep fires from spreading, and also permitting easy access to any burning area. Lookout towers and telephone lines also will be put up. Some tree planting will be done this year and three nurseries will be established.

There is NO SUBSTITUTE FOR EFFECTIVE LUBRICATION

THE lubrication of paper mill machinery is being given closer attention by operating executives than ever before. It is being demonstrated that the intelligent purchase of lubricants and their effective use is a very definite help to greater production and lower costs.

There is no substitute for effective lubrication—and there is no place in the paper industry today for wasteful and inefficient lubricating methods.

Paper mill lubrication has become a matter for specialized knowledge and experience. No mill operator can hope to find the time for a thorough study of all its phases. Texaco Lubrication Engineers are specialists—working every day in this *one* field. They are continually called upon to solve all kinds of practical lubricating problems.

Ask to have a Texaco engineer call. He will offer his services and give you the benefit of helpful experience in the manufacture and use of lubricants for every purpose. Write The Texas Company first.

TEXACO LUBRICANTS

THE TEXAS COMPANY
135 East 42nd Street, New York City

Practical Helps for the Mill Man

Trouble Saver for Vat and Chest Lights

VARIOUS operations in a pulp and paper mill require the use of extension lights in vats and chests. Considerable trouble may be experienced from this practice by the stock or liquids in the chests entering the sockets and shorting across between the shell and the center contact. One operator states that this trouble can be entirely avoided by the use of a weather-proof socket on the extension cord, connecting the shell of the socket to the grounded source (assuming that the lighting installation in the mill is of the three wire grounded neutral system) and inserting a soft rubber gasket of proper dimensions in the bottom of the socket to form a barrier between the shell and the center contact. The gasket must be of such thickness that the lamp base compresses the gasket and makes contact on the center terminal at the same time. This combination may be made more perfect by the use of a soft rubber holder which slips over the cord and weather-proof socket, clamping to the socket by the band around the base of the wire lamp guard. Such a guard and holder is on the market and may be purchased for a small amount. The use of polarized plug outlets is, of course, essential so as to keep the shell of the socket on the grounded wire. By the above described method, lamps may be lowered into any wet place or even submerged in any liquid with no danger of shorts and grounds.

How an Electrical Emergency Was Met by Detroit Sulphite Pulp & Paper Co.'s Staff

Caused by the burning out of their 2,500-k.v.a. turbine generator on Thursday, May 15, the Detroit Sulphite Pulp & Paper Company plant at Detroit, Mich., was forced to cease all operations. Their staff was able, however, to cope with the situation in a manner that shows how well the modern paper mill is completely equipped to handle efficiently the most far-reaching emergencies.

Within an hour following the accident one paper machine was back in operation; by noon a second machine. and in the pulp mill, by 4 o'clock a third machine. By nightfall the engineering and electrical departments had completed the planning and installation of all necessary wiring and switches within the primary and transformer houses, as well as the installation of twelve new 100-k.v.a. transformers which in addition to the already existing transformers were sufficient to assume the necessary load which the Detroit Edison Company supplied. To do this, however, it was necessary for the Edison company to run a high tension line a distance of more than a mile.

By noon Sunday, May 18, or within seventy-five hours of the time of the breakdown, the entire mill, including all the six machines, were back into full production thus causing no great loss of time to either the mill or its customers.

Scotch Masking Tape

After years of study and research, the Minnesota Mining & Manufacturing Company, St. Paul, Minn., is manufacturing a tape known as Scotch Masking Tape which is being widely used for all kinds of masking.

This tape was primarily developed for use in automobile painting and was first used in the large automobile plants. Gradually many other uses for this tape have been found. In addition to its uses in spraying of lacquer, it is also being used by interior decorators to protect moulding and other parts when painting walls. It is also being used in drafting rooms in place of thumb tacks, in hospitals when sealing cracks, doors and windows when fumigating.

Scotch tape is very thin and yet resists all penetrations. The paper backing eliminates raveling hazards and gives it a fringeproof edge. As it is extremely flexible, it will follow moulding and readily conform to irregularities of the surface. It is instantly adhesive and when removed leaves no stain or residue. Its non-drying properties enable it to be used over and over, making its use very economical.

A Vacuum Cleaner for Pulp and Paper Mills

Production executives in the pulp and paper industry fully appreciate the value of cleanliness. Clean pulp and paper often mean dividends. Dirty pulp and paper mean losses. What applies to pulp and paper will also apply to the plants in which they are produced. Consideration must be given to the most efficient means of keeping the plant clean.

A number of mills have found the use of an Invincible vacuum cleaner of real help in their plant cleanliness program. In some instances it is being used for cleaning floors in the finishing room, loft room, rag mill, store room, or any portion of the mill where trouble is not experienced with water.

In other cases, it finds its place in cleaning motors throughout the plant and especially the motors of sectionalized paper machine drives. Walls, piping, paper machine hoods, machine room roofs and calender stacks, are also being kept in a satisfactory condition through the use of the vacuum cleaner. Coal dust is removed from the walls of the boiler house with it. Surplus sandings, when sanding the calenders, is picked up with it. In fact, practically any place about the plant where dirt is apt to accumulate can be advantageously cleaned through the use of this cleaner.

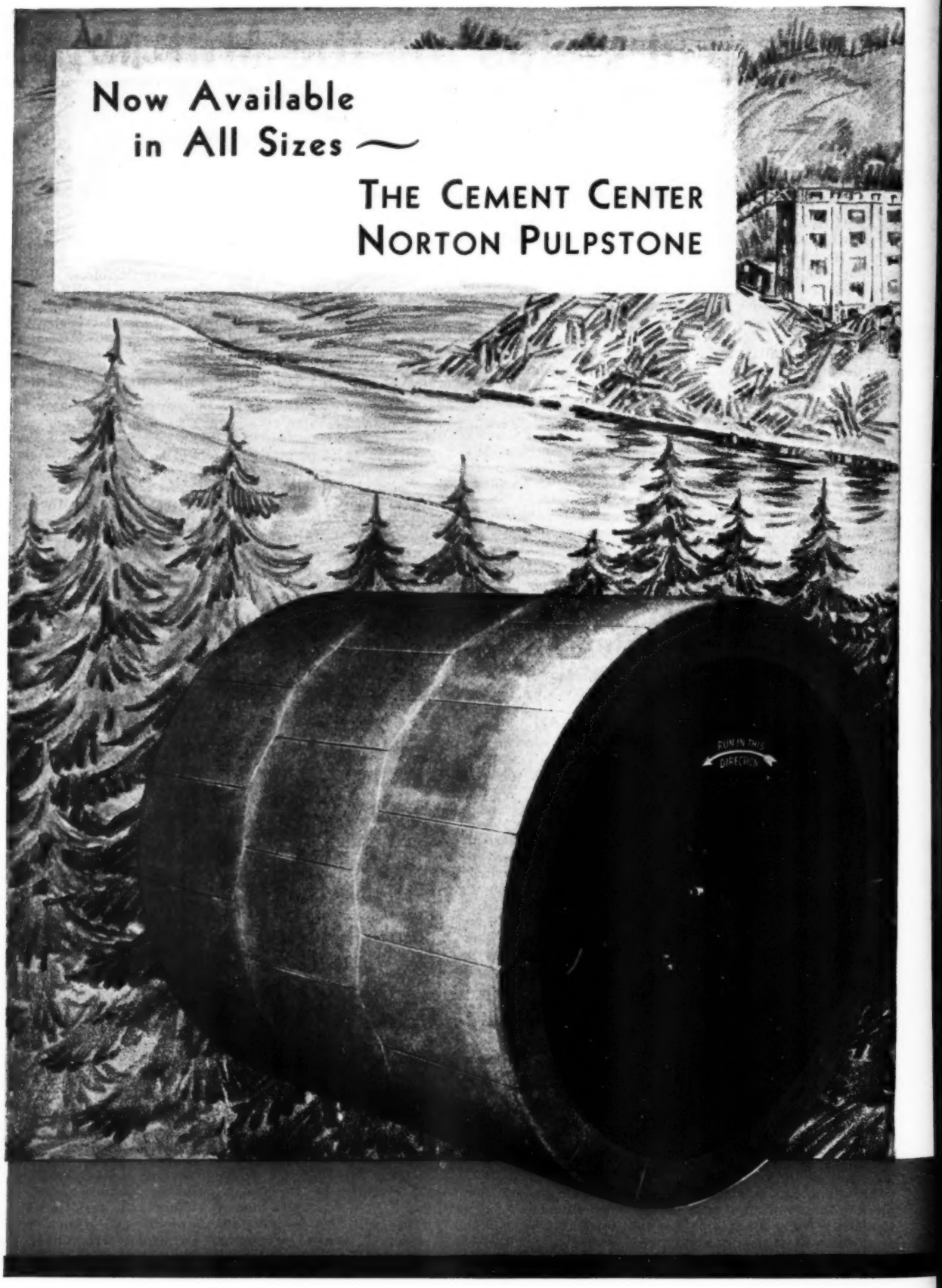
This cleaner is manufactured by Invincible Vacuum Cleaner Manufacturing Company, of Dover, Ohio. They shall be pleased to give you information on methods of cutting your cleaning costs.

Centennial of Weighing

Announcement of a three-day celebration of the centennial of the invention of the modern weighing machine beginning July 4, was made recently in Chicago by W. S. Hovey, president of Fairbanks, Morse & Company which is the outgrowth of the small scale manufacturing business started a hundred years ago at St. Johnsbury, Vt., by Thaddeus Fairbanks and his brothers Erastus and Joseph P. Fairbanks on an investment of $4,000.

Former President and Mrs. Calvin Coolidge will be guests of honor at the celebration which will be held in the historical city of St. Johnsbury, and which has the sponsorship of the Vermont Historical Society, the New England Advisory Council and the Chamber of Commerce. Mr. Coolidge has a keen personal interest in the affair for the reason that he was at one time a student at the St. Johnsbury Academy which was sponsored and supported by Thaddeus Fairbanks.

The principal feature of the program will be a historical pageant depicting the progress during the last century in the evolution of the modern weighing machine and its profound influence upon human welfare and world commerce. There will also be a notable exhibition of original patent models of scales invented by Fairbanks, which have been borrowed for the occasion from the patent office.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Canadian News

Freight Rate Hearing Begun

A hearing of exceptional importance and interest was started last month before the Board of Railway Commissioners, at Ottawa, and, after lasting for a whole week, was adjourned until June 16. The case has had a long history, dating back to a year ago when Canadian railways announced higher rates on newsprint consigned to points in the United States. Before they went into effect, efforts on the part of the consignees resulted in a suspension of the announced tariff by the Railway Board. The purpose of the present hearing is to determine whether or not the suspension will be permanent. An imposing array of legal talent was in attendance at the hearing to take care of the interests of the Canadian Pacific Railway, the Canadian National Railways, several of the more important American railroads, the International Paper Co., the large Canadian newsprint producers, and most of the large newspapers of the United States.

The evidence and discussion brought out a number of interesting points. For instance, freight rates on newsprint from Canadian mills to points in the United States in some cases are lower than rates over corresponding distances in Canada; an example of such an anomaly is to be found in the rate from Ottawa to Pittsburgh over the suspension bridge at Niagara Falls, which is lower than the rate from Ottawa to Niagara Falls, Ont. As soon as a shipment crosses the border, the international rates become effective and the return is lower from the longer haul than from the shorter one. Again, the rate from Ottawa to Windsor is only half a cent lower than from Ottawa to Chicago, although the distance to the latter point is 500 miles greater.

Although they provided it with favorable treatment in the matter of freight rates in its infancy, the railway companies now feel that the newsprint industry in Canada is in a position to pay rates on newsprint more nearly equal to those charged on other commodities. The new rates proposed would have the effect of extending into the United States the rates charged on newsprint in Canada, with a considerable tapering off. Under the rates proposed the railways are asking the same return on international traffic which they received when newsprint is shipped to a consumer in Canada. Newsprint is classed as "fifth class" freight, but the full fifth-class rate was never charged. The new international rates are based on the same percentage of the fifth-class rate as the domestic Canadian rates, 75 per cent. The rates on paper were originally set very low to encourage the development of the industry in Canada. In 1908 a general revision of freight rates was made, and it was then felt that it would be a hardship on the industry to put it on the regular fifth-class rate. The compromise rate of 75 per cent of the fifth-class is still in effect in Canada, and the present proposal is merely to extend it in international traffic to the United States.

It is expected that, after the hearings have been concluded both in Canada and the United States, conferences will be held between the Interstate Commerce Commission and the Board of Railway Commissioners before announcing their decisions.

Reductions, both on the comparison with the preceding month and with the same month of last year, are shown in the export figures for newsprint and pulp from Canada during April. At $9,199,882 total newsprint exported during the month shows a sharp drop from the March figure of $12,918,086, and a moderate decline from the $9,747,536 exported during April 1929. Exports of pulp at $2,631,122 compared with 4,704,595 in March and $3,155,350 in the corresponding month of last year. For the four-month period, exports of newsprint show a reduction at $44,807,803 from the $49,048,766 figure of last year, while pulp exports for that period are higher at $14,826,171 against $14,013,625.

Newfoundland Negotiating to Sell Labrador

Details reached Montreal last month of an authorized public statement by the Government of Newfoundland regarding negotiations for the sale of Labrador for $100,000,000 and for the establishment in Newfoundland of a large new paper industry. The government admitted that for months past the Executive Council had been engaged in these negotiations, but did not disclose the identity of the principals with whom it had been negotiating. It is said on good authority that a representative English, Canadian and United States group is negotiating to purchase Labrador, and is expected to submit to the Government at an early date a proposal to purchase Newfoundland's interest in timber, mineral, waterpower, fishing and other rights on inland lakes and streams, reserving Newfoundland's fishery rights on the whole coast line with unrestricted access to bays, streams and inlets for wood, timber and fishing purposes, for repairs to vessels.

In prosecution of the fishery policy, jurisdiction, would be reserved over a three-mile strip on its coast in event of that territory so acquired may pass to control of another British Dominion. Otherwise, existing police, revenue and jurisdiction remain in Newfoundland's control. It is rumored that division of opinion exists in the Executive regarding the negotiations for the establishment of a large new paper manufacturing industry in the Gander Valley, Newfoundland. The chief objection to the agreement is said to be due to International Paper Co.'s influence, which aims to obtain the Reid company's timber belts in Newfoundland, and 10,000 square miles of limits in Labrador.

In its statement, the Government says:

"The matter (the proposed new paper mill on the Gander River) is one of great importance and requires very grave consideration. It involves a guarantee of $15,000,000 by Newfoundland. That itself is a staggering proposition and cannot be entered into without we are made secure against future complications as common sense and experience dictate. One of the reasons the Gander proposition has not been completed is because of this proposal to guarantee $15,000,000 of bonds of the new paper company. It will not do to establish a mill of gigantic proportions which may be bankrupt in two or three years.

"One of the chief reasons for delay is the guarantee proposal. Every effort has been made to get the interested parties to proceed with construction without such a guarantee. Another cause of delay has been the request for 20,000,000 cords of pulpwood from Labrador territory, which involves granting 10,000 square miles of timber lands. The considerations involved transfer or sale of Newfoundland-Labrador to which no thought has been given. At any time the country may have concrete proposals submitted by responsible parties for the purchase or lease of Labrador for $100,000,000.

This is the greatest issue Newfoundland ever had to consider. Little can be discussed publicly until negotiations in relations thereto are completed. The Liberal party will back proposals for the transfer of Labrador for $100,000,000 to be obtained therefor, and the fishery interest of Newfoundland to be made safe and secure for all time, and will do all possible to obtain a transfer on the terms above mentioned."

Effect of the Dunning Budget

Announcement of the Dunning budget's reduction in the sales tax was of considerable interest to the wholesale paper trade in the Dominion. Most firms had been hoping that the sales tax would have been left at 2 per cent for another year

Where Fancy Figures Fall Down

Putting performance on parade may be good practice for some classes of equipment. But for others—paper mill ventilating apparatus in particular—performance means little without full consideration of the conditions that made such performance possible. Savings shown from one installation operating under most favorable circumstances would be impossible to secure on the same installation operating under less favorable conditions. Fancy figures on performance fall down in the face of other factors that determine the consistent efficiency of any method of ventilating. Mill managers prefer to face the facts and forget the figures when they pertain to a single installation that can in no way be considered typical.

• • • • •

Ross Systems for ventilating are recognized as the most practical, efficient and economical method available. When conditions are compared, no other method has yet been found that produces equally advantageous results.

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ROSS SYSTEMS

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and then abolished altogether. The tax, however, has been reduced by half, and, in the opinion of some of the members of the Canadian Paper Trade Association, this may mean a reduction of prices to the consumer. The reduction has been welcomed to a certain extent, but it is pointed out that it costs a considerable sum to collect the tax in the business and paper dealers will not be very far ahead on the deal. Even though a reduction of one per cent was called slight in its probable effect on commodity prices, some benefit, it is thought likely, will be passed on to the general consumer. Halving of the rate of sales tax will not cut down the load proportionately, it is pointed out, because the cost of bookkeeping and other detail work in connection with collecting and keeping track of the tax remains the same whatever the rate.

The sales tax reduction is applied also to all retail merchants. Paper and typothetae organizations had been endeavoring to have printed matter coming into this country rated on an ad valorem basis, but in the new schedule the Government has turned the paper and printing men down on the proposition, the rate remaining at 15 cents per pound.

Importations Hurting Canadian Board Industry

While there has been considerable overproduction of boxboard in Canada, it would appear that this is not the only difficulty in the path of prosperity for the industry just now. The troubles of the manufacturers of this product have been increased by heavy importations of stock from the United States and not a few Canadian firms are using the imported board.

It came to light a short time ago that one wine company in the Niagara district sells, through the medium of the Ontario Government liquor stores, wines packed in testboard cartons that are manufactured in a suburb of Detroit, the cartons being used as containers for goods sold in Ontario Government stores at a time when Canadians are barred against positions in the Michigan city. It is stated that among other concerns carrying on business in Canada that are buying testboard cartons in the United States are two large soap companies, a large ginger ale manufacturing concern, a big patent medicine concern, one of the biggest chain store concerns in Canada, one of Toronto's largest stores and other Canadian manufacturing industries and distributing agencies. It is also stated that the clothing trade and garment industry are getting a large percentage of their box requirements from Buffalo, Rochester, Detroit and other points across the border. The material used for the purpose of the clothing and garment industries' box requirements consists of folding board and chip board.

Another feature is the fact that Canadian box makers are buying straight American board on a constantly increasing scale. This includes board used for corrugating purposes and test liners. In some cases, it is said, the liners were made in Canada and the other board imported for corrugating, while in other instances the board was imported in its entirety. Most of the board thus offered from the States is in the nature of "distress" stocks, and while most of the box makers would rather use Canadian-made goods, the fact remains that many of them are yielding to the temptation to patronize the bargain counter. In the meantime, the impression goes around that the prices of the home product are excessive.

The appeal of the Fort Frances Pulp and Paper Co. to the Privy Council against a judgment handed down by the Supreme Court of Canada was heard in London last month, and judgment was reserved. The case is one going back to the time of newsprint price control during the war.

As a result of the approval of the American Newspaper Publishers' Association of the principle of stabilization of the production of newsprint, it is believed that the plan put forward by the Canadian News Print Institute in regard to a progressive increase in price will go into effect. According to this, for three and a half year contracts, to go into effect from July 1 of this year, the price will remain at $55.20 a ton, f.o.b. mill, until the end of 1930. Then, there will be an advance of $2 per ton for 1931, another $2 per ton for 1932, and $1 per ton in 1933, making the price $60.20 in 1933. On the bassis of last year's production of about 2,750,000,000 tons, this will mean that an additional $5,500,000,000 will be distributed among the Canadian mills, while in 1933 the additional revenue over that received this year on the same tonnage will be over $13,500,000,000.

The Dominion Bureau of Statistics has recently completed an estimate of the total forest production of Canada for 1928, and an estimate of the extent to which the forests are being depleted annually in the process of exploiting these materials. According to these estimates, the total forest production of 1928 involved the cutting of 2,988,038,430 cu. ft. of standing timber. This constitutes only the annual depletion for use and to it must be added the volume of material annually destroyed by fire, which exceeds 900,000,000 cu. ft. of merchantable timber and young growth on 1,300,000 acres. Insects and fungi destroy annually at least 800,000,000 cu. ft. The latest available estimate places Canada's forest resources at 224,304,000,000 feet board measure of sawn lumber, and 1,121,993,000 cords of pulpwood, ties, poles and other smaller material. As there is a steady increase in volume taking place in all healthy stands of timber due to annual growth, by the application of scientific forest management this annual growth can be stimulated and could be made to take place over the entire area of potential forest land, it is believed.

Canadian newsprint was recently shipped by rail to Portland, and there loaded on the Steamer William A. McKenny. The steamer took the cargo to Montevideo and Buenos Aires. En route, the McKenny called at New York. The movement of Canadian newsprint by this route to South America is unusual, but indications are that the same route will be used for a number of shipments of newsprint produced in Canadian mills this year.

◆ QUEBEC ◆

Long-Expected Merger Announced

Formal announcement was made last month of the consolidation plan to bring together St. Lawrence Paper Mills Co., Ltd., Brompton Pulp and Paper Co., Ltd., and Lake St. John Power and Paper Co., Ltd., after many months of negotiations looking toward such a deal. A new holding company, the St. Lawrence Corp., Ltd., is to be created for the purpose of acquiring control through common stock ownership of the above three named companies. The plan has been approved by the boards of directors of all the companies involved, and, as a result of an agreement with the Dominion Securities Corp., is virtually assured of being carried through.

St. Lawrence Corp., the new holding company, will have outstanding 300,000 shares of Class A $2 cumulative convertible preferred stock and 585,000 shares of common stock of no par value, and the basis of exchange will be as follows: for each share of common stock of St. Lawrence Paper Mills Co. one share of common stock of St. Lawrence Corp., Ltd.; for each share of common stock of Brompton Pulp and Paper Co. one share of Class A $2 cumulative convertible preferred stock of St. Lawrence Corp.; for each share of common stock of Lake St. John Power and Paper Co., 7/10 share of the common stock of St. Lawrence Corp., Ltd. The complete details of the plan, as set forth to shareholders of the various companies, is as follows:

The officers and board of directors of the respective companies named below, working in conjunction with the Dominion Securities Corp., have formulated the following plan to unify the operations of these companies, and recommend to the shareholders of each company that they exchange their holdings and thus give full effect to it. The plan is founded on an agreement between St. Lawrence Paper Mills Co. and the Dominion Securities Corp.

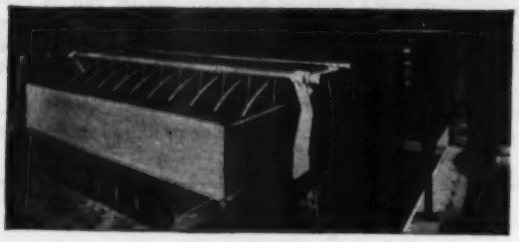
Can These "Dollar and Cents" Values Be Ignored?

By the Man Interested in Deckers

AS an example of Oliver United Deckering capacity—a certain groundwood unit with 350 sq. ft. of area is handling 42.5 tons of 0.47% stock including about 13 tons of broke and white water solids.

This is convincing evidence of the economic value of Oliver United Deckers.

By the Man Interested in Save-Alls



CONSIDER the results from the Oliver United Save-All—two units, replacing five cylinder type save-alls, reduced fiber and filler losses from 4.34 lbs. per 1000 gallons to 0.92 lbs. A clean-cut saving of 3.42 lbs.

This is convincing evidence of the economic value of Oliver United Save-Alls.

By the Man Interested in Bleach Washing

FIBER retention as well as thorough washing is an outstanding feature of Oliver United Bleach Washers. For example—in the fine paper division of a large paper company—a 40 ton unit—shrinkage losses were reduced from 5.5% to 0.15% by using Oliver United Bleach Washers instead of 3 cylinder type washers.

This is convincing evidence of the economic value of Oliver United Bleach Washers.

OLIVER UNITED FILTERS INC.

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TOKYO American Trading Co., Inc.
MELBOURNE Fyvie & Stewart
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SCHEVENINGEN, HOLLAND
and SOERABAIA, JAVA Van Lelyveld & Co.
RECIFE, BRAZIL Ayres & Son

1. A new holding company, St. Lawrence Corp., Ltd., is to be formed for the purpose of acquiring control, through stock ownership, of the three following companies: St. Lawrence Paper Mills Co., Brompton Pulp and Paper Co., and Lake St. John Power and Paper Co.

2. The present outstanding capitalization of the constituent companies is as follows:

St. Lawrence Paper Mills Co., $14,250,000 6 per cent preference shares, 500,000 common shares of no par value. (The issued common stock of St. Lawrence Paper Mills Co., Ltd., is to be increased to 515,000 shares, as described below and of its unissued stock 222,500 common shares are reserved against outstanding subscription warrants and options to subscribe. Ten shares of Brompton Pulp and Paper Co., Ltd., preferred stock are still outstanding and $133.50 per share is deposited to purchase the same.)

Brompton Pulp and Paper Co., 300,000 shares common stock, of no par value.

Lake St. John Power and Paper Co., $5,000,000 first mortgage 6½ per cent bonds, $3,000,000 6½ per cent mortgage debentures, $3,600,000 7 per cent preferences shares, 100,000 common shares of no par value.

3. The capitalization of the new holding company will consist of 300,000 Class A $2 cumulative convertible preferred shares, all of which will be issued if all the shares of Brompton are exchanged, and 2,000,000 common no-par-value shares, of which 585,000 will be issued if all the shares of the St. Lawrence and Lake St. John companies are exchanged. Of the unissued shares of St. Lawrence Corp., 222,500 will be reserved for exchange against shares covered by the outstanding subscription warrants and options to subscribe to St. Lawrence Paper Mills Co., and 600,000 common shares will be reserved to meet the conversion rights of Class A shares. The Class A shares of a par value of $50, are entitled to 4 per cent cumulative preferential dividend, are redeemable at $55 per share, convertible at any time into two common shares and entitled to one vote per share.

4. As a result of the agreement St. Lawrence Paper Mills Co. for $2,000,000 and 15,000 of its fully paid common shares will have acquired $3,600,000 of 7 per cent preferred stock of Lake St. John Power and Paper Co. with cumulative dividend from April 1st 1930, and will have assumed on a basis equivalent to the basis of exchange above mentioned that St. Lawrence Corp. will receive 80,000 fully paid common shares in the capital stock of Lake St. John, 150,000 common shares in the capital stock of Brompton and 200,000 common shares of St. Lawrence Paper Mills Co. It is hoped that the remainder of the common shares in each of the three companies will be acquired by St. Lawrence Corp. as result of offers of exchange which are being made on the basis outlined above.

Ticon Meetings Held in Montreal

It is learned that trade practices in the newsprint industry were discussed in Montreal last month by delegates from newsprint manufacturers in various countries in Europe, as well as in Canada. Meetings were held of The International Committee on Newsprint, better known as TICON, the name being made up of the initials of the former title.

Ticon includes most of the newsprint manufacturers of Europe, as well as of Canada. Among the countries represented are Great Britain, Norway, Sweden, Denmark, France and Germany, and, of course, Canada. At the meetings in Montreal it is understood that the principal paper-producing countries of Europe were represented. No official report of the meeting has been made, but it is known that trade practices were discussed and arrangements perfected which had previously been made for furnishing to all members of Ticon up-to-date statistics of the various overseas markets. Meetings were held at the Pulp and Paper Research Institute, which was inspected by the various delegates, who were deeply impressed by its complete facilities for carrying on experimental work in connection with the manufacture of pulp and paper, a complete miniature paper mill being available for experimental work.

During their stay in Montreal the visitors were entertained by the Canadian Pulp and Paper Association at a dinner at the Ritz-Carlton Hotel, at which Harold Crabtree, president of the Association, presided, and Ernest Rossiter, chairman of the Canadian branch of Ticon, acted as toastmaster.

In their review of the international market for newsprint, notwithstanding the recent unfavorable situation as regards Canada and the United States, the visitors expressed the opinion that there is nothing to be alarmed about and that there will never be a condition in which the market will not readily absorb the available supply of paper, even though, temporarily, the output may seem to exceed what is normally required. Newsprint consumption in Europe, it was reported, shows a gratifying and constant increase, and the world outlook in general is not unfavorable.

After the meetings many of the delegates left Montreal on a motor trip to inspect the mills of Canadian International Paper, Wayagamack and St. Lawrence Paper at Three Rivers, and were much impressed with the extent of the paper mills in this district.

Canadian Paperboard May Give Small Cash Dividend

The bondholders and the creditors of the Canadian Paperboard Co., Montreal, with manufacturing plants in Montreal, Toronto, Campbellford and Frankford, Ont., will probably forego pressing technical claims and creditors will consider accepting a cash dividend of 5 per cent for their interests in the receivables and chattels. Under this arrangement the trustee, F. C. Clarkson, thinks the undertaking can be continued with the possibility that the business can be organized with the creditors retaining their rights to 95 per cent of their claims. At any rate, in the meantime, they will have the business which the receiver will be able to offer with continuation of operations.

The trustee explained that there was a possibility of contention between bondholders and creditors as to the ownership of the equity in the receivables and the removable chattels, which, together, have an estimated value of $102,500. To avoid litigation he suggested that each party take half of this, or $51,250. Unless such an arrangement is immediately effected whereby this issue could be cleared up and the business of the company carried on, he feared that the assets of the company would have to be sold.

Construction of the plant of the new newsprint mill of the MacLaren interests at Buckingham is now nearing completion, and installation of the machinery is proceeding. The mill will have an initial capacity of 250 tons per day, and is expected to come into production this fall. The company has constructed a small power plant near the mill, and work is proceeding on the 125,000-horsepower development at Grand Falls, some distance from the new mill.

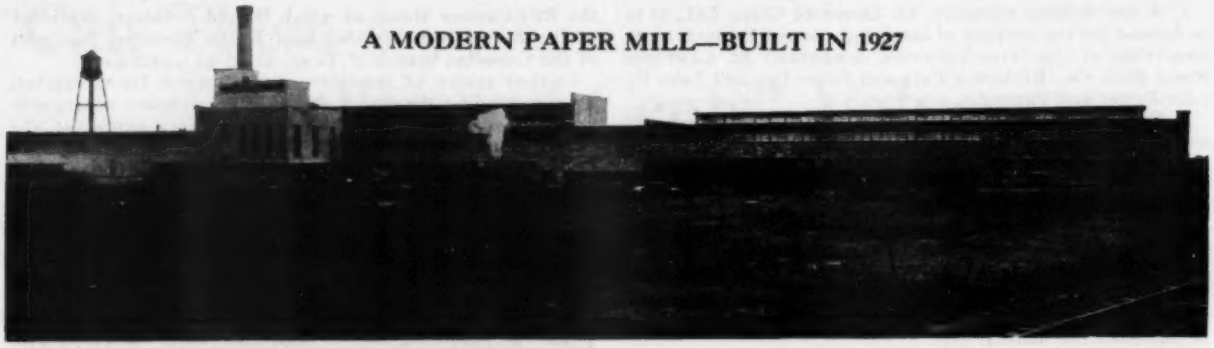
James M. McCarthy

James M. McCarthy, eminent engineer and philanthropist, died in Quebec City on May 23, at his home on Grande Allée, at the age of 66 years.

Mr. McCarthy was a McGill graduate and civil engineer, vice-president of Price Bros. and Co., vice-president and treasurer of the American Freight and Traction Co., New York, member of the firm of Emerson, McMilland and Co., New York, Quebec director of the Royal Trust Co., and director of the Quebec Power Co. He designed and constructed the substructures of many bridges in Canada and the United States and was consulting engineer to the Province of Quebec in connection with water storage systems. He also designed and constructed waterworks systems, notably the system at the Valcartier military camp at the outbreak of the world war.

After retirement he became associated with Price Bros. and the Duke Price firm in projects at the Isle Maligne and Saguenay river power developments.

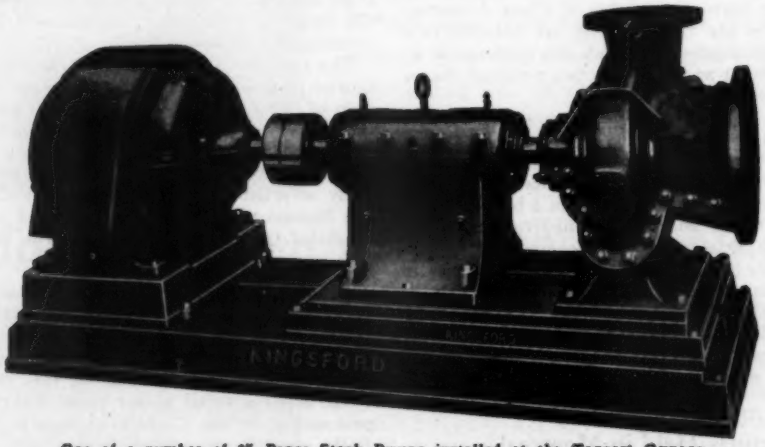
Difficulties in lumbering due to the fact that many logs will not float for any length of time and investigations of this



PLANT OF TAGGART OSWEGO PAPER AND BAG CORPORATION

Absolute confidence has been exhibited by the Taggart Oswego Paper and Bag Corporation, Oswego, New York, in providing for the most part, centrifugal pumps for their fresh water supply, the handling of white water, stock, boiler feed and process requirements, and such installation for these purposes of—

KINGSFORD PUMPS



One of a number of 8" Paper Stock Pumps installed at the Taggart Oswego Paper & Bag Corp., Oswego, N. Y.

All KINGSFORD double suction pumps up to 10" size are made with bearing housings cast integral with the lower half of casing (machined as a unit with casing), insuring absolute and permanent alignment of bearings. Horizontal split casing provides quick accessibility to interior. Sealed bearings can be furnished in either babbitted, ball or Timken roller types. KINGSFORD patented hydraulic balancing device eliminates end thrust.

KINGSFORD multi-stage centrifugal pumps have the same construction features as listed above, same type and construction of bearings, and with either ball thrust bearing or KINGSFORD patented double acting hydraulic balancing piston.

The desirability of these features appeals to Paper Mill Operators and all of them will only be found in KINGSFORD line of pumps.

Write for further information—our 30 years of experience may be of value and profit to you.

Kingsford Foundry and Machine Works

Una-Flow Engines all Types
High Speed, Vertical,
Horizontal and Marine.
Centrifugal Pumping Machinery

Oswego, N. Y.

Internally Fired Boilers
for
Marine and Stationary Purposes
Sectional Water Tube Boilers

problem that have been carried out at McGill University were described in a series of papers by G. W. Scarth, Edwin C. Jahn, R. D. Gibbs and C. W. Argue, read before the botanical section of the Royal Society of Canada, at Montreal, last month. The problems which these workers have endeavored to diagnose concerns the causes and explanation of the mortality of certain trees, and the results are expected to help the practical man in making conditions more hygienic for his logs. The papers explained the investigations that have been directed to finding out how the logs sink and why they do so, and the methods that are being used in this work, which is being carried on at the invitation of the Woodlands Section of the Canadian Pulp and Paper Association.

Public Service Commission Regulates Log-Driving

As a result of complaints from small settlers along the Chaboilez River, in the Abitibi region, that they were not getting a fair chance to "drive" their logs and thus make the timber marketable, the Quebec Public Service Commission sent engineers to unravel the tangle which ties up around 3,500,000 feet of lumber. The Commission has ordered that all log-floating on the river shall be done in common, which means that the ten companies and individuals wanting to drive have to place their men under the two engineers which the Commission has sent to superintend the drive, and all the gangs will work on one drive after another.

The Commission has been forced to this step through the dissatisfaction which has reigned on the river because of the inability of riparian timber cutters to agree on the rotation in which each lot of logs shall go down the river. There are six small settlers, who depend for their livelihood in large part on selling their annual timber cut, which must be "driven" to one mill or another. There is one pulp and paper company, two lumber companies and an individual mill owner.

New Dennison Plant at Drummondville

After considering the matter for sometime, the Dennison Company, of Framingham, Mass., has started the construction of a branch plant at Drummondville. Crepe for export will be made at the Canadian plant, and later on other items will be produced.

The question as to whether the proposed factory should be located in the Province of Ontario or of Quebec was finally decided in favor of the latter. The site selected possesses the advantage of close proximity to Montreal, which is of considerable importance as a large portion of the output will be for export, and it is also fairly close to the main plant at Framingham. During the winter months, when the St. Lawrence is frozen, export shipments will be sent from St. John, N. B. Other advantages of Drummondville as a manufacturing center are abundance of cheap hydroelectric power and satisfactory labor conditions.

Canadian Ingersoll-Rand Co. has been licensed by the Centrifugal Engineering and Patents Corp. to manufacture and sell in Canada a centrifugal separator incorporating the Erkensator patents for processes and principles of centrifugal separation. Three companies are now licensed to manufacture under these patents on the North American continent: the Canadian Ingersoll-Rand Co., exclusively in Canada, and the Bird Machine Works and Tolhurst Machine Works in the United States. The machine made by Ingersoll-Rand, to be known as the Circofiner, is intended to take the place of rifflers and sand traps, and provides in a much smaller space a cleaning effect many times as great.

T. L. Dunbar, of Montreal, and Chemipulp Process, Inc., of Watertown, N. Y., are entering the sulphate and soda field in an advisory capacity with a view to reducing production costs by the application of the Bates processes, which were developed by Dr. John S. Bates while he was chemical engineer for the Bathurst Co. The processes were described by Dr. Bates in a paper delivered before the Technical Section of the Canadian Pulp and Paper Association a couple of years ago. A valuable feature is that they can be applied to most existing plants without necessitating the addition of expensive equipment.

J. Howard Stannard was recently appointed general manager and elected a director of International Fibre Board, Ltd., makers of "Ten Test" insulating building board, with plants at Midland, Ont., and Gatineau, Que.

At the annual meeting of Price Bros. and Co., at Quebec, Lieutenant-Colonel John H. Price, the president, announced that the directors, feeling that it would be some years before the supply and demand of newsprint would approach an equality, had adopted a policy of diversification in wood products. "We are already putting the wood waste of our lumber establishments to commercial use," he said, "and we have completed the construction of a mill at Donnacona, where we are manufacturing a high grade insulating board. With the assistance of our Research Department we are looking forward to finding further profitable outlets for the more complete consumption of the trees cut in our forests."

ONTARIO

Low Production Affects Mill Towns

The Espanola mill of the Abitibi Power and Paper Co. was shut down last month, and present plans, it is said, are to keep it closed all summer. In a statement issued at the company's office at Sault Ste. Marie, it was stated that the step was taken due to the condition of the market and the depression in the demand for newsprint. According to the statement, most of the employees will remain at Espanola during the shutdown, while some of the men will be given employment at other mills of the company until the plant re-opens. The mill is not as efficient to operate as several others of the nine now controlled by the Abitibi organization, and the plans of the company are to confine operations to the mills which can turn out newsprint profitably at present prices. There is said to be no immediate prospect of orders which would result in re-opening the Espanola mill. Tonnage disposed of by the company this year is described as rather limited and a lean year is looked for by practically all the newsprint companies. The Espanola mill has six machines, some of them small; it was reported to be running at about 50 per cent of capacity when it was closed.

Early last month about a hundred men were released indefinitely from the employ of the Abitibi mill at Sturgeon Falls. A short time later 65 men left the town with packs on their backs for the spring river drive. The majority were young men who had been educated in the schools of the town but were unable to get work there. The plant regularly employs about 250 men. Without any warning or notification, it is said, but at a time when the employees were expecting announcements that the company was going to enlarge the plant and engage more men, 90 men were released from the company's service. Some have been given positions in the research department, a recent innovation at Sturgeon Falls, while others have left the town and their families behind to work in other mills of the company or have migrated to other localities.

In keeping with its policy of operating its most efficient mills and shutting down the less efficient ones, the Abitibi company has started up again both machines at its Thunder Bay plant. This mill, which is owned jointly by Abitibi and Canada Power and Paper, had been shut down for some months.

No time is being lost in the development of the Abitibi canyon and the five rapids immediately above it, where the new dam is to be built to provide 275,000 horsepower, of which 100,000 horsepower will be taken by the Hydro-Electric Power Commission of Ontario. Recently a party of men left for Island Falls where the company has a 60,000-horsepower hydroelectric plant. The men took sup-

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47,247 feet of steam pipe were laid by the Indianapolis Light & Power Company in 81 days. Here is probably the largest heating system of any kind to be completed by any utility in one year's time.

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plies for the camp at the canyon and were followed shortly after by an engineering party. The next step will be the clearing of a camp site, the building of homes to accommodate the construction gang, and everything else that goes with a large camp. The Temiskaming and Northern Ontario Railway is pushing its spur line and the main line into the canyon, so that supplies can be taken in on a larger scale.

S. J. Frame, formerly secretary of the Canadian Paper Box Manufacturers' Association, Toronto, has been appointed general manager, as well as secretary, of the Wrapping Paper Mills Association.

Frankford Mill Shut Down

The operations of the Canadian Paperboard Co. at Frankford ceased recently. The mill had an output of 30 tons of groundwood daily and 50 tons of all grades of paperboard. It is understood that the closing of this plant will tend to improve the position of the company.

Heretofore the four mills of the company have been working 20 days a month. With the Frankford plant closed down, it will be possible to step up the production of the other units and still maintain production on a lower cost basis. The closing of the mill is likely to be only a temporary matter, depending on the recovery of the paperboard market. Canadian Paperboard Co. is now being operated under the direction of a receiver and owing to the rather unsatisfactory condition of the board market, certain economies are being effected.

Charles V. Syrett, of the C. V. Syrett Paper Co., Toronto, has been elected vice-president of the Canadian Manufacturers' Association, Toronto Division.

Patterson Elected President of Safety Ass'n.

At the annual meeting of the Ontario Paper Makers' Safety Association, held in Toronto a couple of months ago, F. S. Duncan, president of Provincial Paper, Ltd., was chosen president. Later Mr. Duncan advised the organization that owing to business reasons he would be unable to act in that capacity, although willing to remain on the board of directors.

A meeting of the directors was held in Toronto last month, at which J. E. Patterson, of the Abitibi Power and Paper Co., was elected president in succession to Mr. Duncan, and E. Howard Smith, managing director of the Howard Smith Paper Mills, was chosen as vice-president. In reluctantly accepting Mr. Duncan's resignation, the directors expressed their appreciation of his services to the pulp and paper industry in Canada generally, and to safety interests of the mills in particular.

To better cope with the forest fire menace in the Thunder Bay district, additions to equipment and new improvements have been authorized by the Ontario Government. Three steel observation towers, among the first to be constructed in the district, will be located, one at Jackfish Island in Lake Nipigon, one at or near Hurkett, on the boundary between the townships of Stirling and Hele, and the third at Whitefish Lake. Two headquarters for the deputy chief rangers will be established and constructed at Kashabowie and at Whitefish.

Most of the paper mills in the Niagara district were closed down for a week commencing May 19 while the Government had men at work on the annual house-cleaning of the old Welland Canal from which water power is secured.

An interesting development in the field of pulp and paper machinery in Canada is the arrangement recently concluded between Downington Manufacturing Co. and William Hamilton Co., whereby the latter acquired the rights for the manufacture and sale in Canada of the Kilberry suction roll. The inventor of the roll, George Kilberry, is a well-known designer of pulp and paper mill equipment and was for some

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The ever increasing number of satisfied "Invincible" users clearly indicate the invaluable use of its cleaning facilities in pulp and paper mills.

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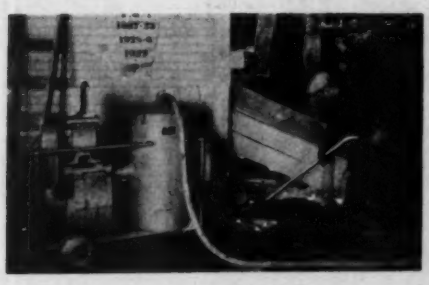

The above are only a few of the many comments received lauding the satisfactory services rendered by "Invincible."

Besides giving utmost satisfaction, the Invincible Industrial Vacuum Cleaner saves enough money to pay for its cost, upkeep and expense twice a year. In many instances "Invincible" savings have far exceeded this—besides cleaning more thoroughly.

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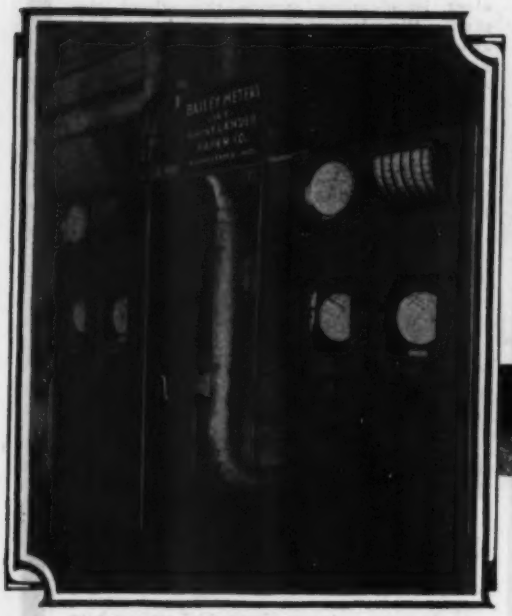

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time on the engineering staff of Charles Walmsley and Co. (Canada), Ltd. The Kilberry roll has been in successful operation for some years and has a number of individual features.

Abitibi Consolidates Woods Operations

With a view to the attendant operating benefits, it has been decided to organize a single unit for handling all the woods operations at the Head of the Lakes of the Fort William Division of Abitibi Power and Paper Co., the Thunder Bay Paper Co., and Provincial Paper, Ltd. H. G. Schanche, general manager of woods operations of the Abitibi organization, has made the following appointments, effective June 1st:

W. S. Merchant, formerly manager of woods operations of the Smooth Rock Fibre Division, to be manager of woods operations at the Head of the Lakes.

B. H. Tanner, of the woods department of the Iroquois Falls Division, has been appointed manager of woods operations of the Smooth Rock Fibre Division to fill the vacancy created by the promotion of Mr. Merchant.

W. J. Greer, manager of woods operations of the Fort William Division and of the Thunder Bay Paper Co., to be in charge of the purchase of wood for all the companies from settlers and independent operators.

C. A. Gardner, formerly woods manager of Provincial Paper, Ltd., to be in charge of operations within the holdings of the companies and of driving and towing operations.

A. J. Auden, formerly assistant woods manager of the Fort William Division and of the Thunder Bay Paper Co., to be in charge of all forestry work, logging, engineering, control and scaling.

❖ NOVA SCOTIA ❖

Pulp Mill Makes Way for Power Plant

The pulp mill of the old Clyde and Sissiboo Pulp and Paper Co., located at Weymouth, on the Sissiboo River, is to be dismantled for the Digby Power Board, which has a power development on that river. The electric current developed at the Sissiboo plant is transmitted to various communities in Digby county, the power project being a purely municipal undertaking.

The pulp mill has not been operated for about four years, and when operations ceased it was under the direction of English papermaking interests, which also operated the sister plant at River Clyde. The acquisition of the property by the county power board has resulted in a decision to demolish equipment, including the machinery, and remove the building and all the scrap iron, shafting, pulleys, etc. It is expected that by the late fall there will be no trace of the old mill left.

The Weymouth pulp mill was one of the oldest pulp plants in the Maritime Provinces, and, at the outbreak of the war, was one of the busiest. It was partly burned and was rebuilt. The Becker interests of England once operated the mill, and the Lloyds of England followed in control. Although there has been some talk in recent years of the mill being re-opened, nothing has developed.

The company officially passed out of corporate existence early in 1929, when the Mersey Paper Co. took over the organization from the hands of the receiver at a price of approximately $200,000. Proceeds, after allowance for various expenses, were distributed among holders of the 6½ per cent bonds at the rate of approximately 38 cents on the dollar.

Mersey Output Completely Sold

The Mersey Paper Co.'s two 125-ton newsprint machines are operating practically at capacity, and the company has sold and is delivering its total output as fast as it can manufacture it. What price the company is obtaining for its output has not been announced, but it is understood that contracts provide for a sliding scale of prices.

The Legislature has been informed that over $5,200,000

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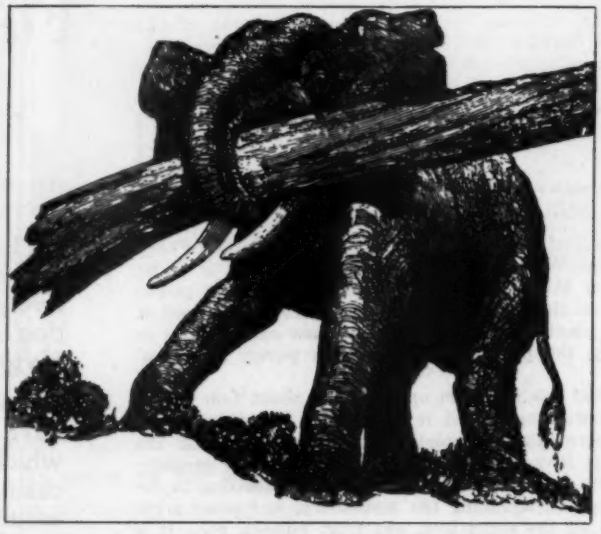

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has already been expended in contruction of the hydroelectric development on the Mersey River. Costs are running at a higher rate than was originally estimated. The original estimate was $3,800,000, which was subsequently increased to $6,000,000. The difference in cost will have to be borne by the Mersey Paper Co., which appears to be satisfactory to all parties. The company will likely finance the expenditure through a further issue of mortgage bonds sometime in the future.

Possibility of the establishment of another paper mill of 500 tons daily capacity in Nova Scotia was outlined recently by Harold S. Johnston, chief engineer of the Nova Scotia Power Commission, before a Halifax audience. The project is based in its entirety upon the production of abnormally cheap electric power through the harnessing of the enormous tides of the Bay of Fundy at a point within 20 miles of the town of Amherst. Mr. Johnston estimated that power could be generated more cheaply at this point, and at less cost than it is now being produced anywhere in Eastern Canada. He pointed also to the fact that the power would be available in the center of one of the most heavily timbered sections of Nova Scotia, in the heart of both Cumberland and Colchester counties, which to-day export thousands of tons of pulpwood annually to the United States in the raw states.

◆ MANITOBA ◆

Priority Permit Renewed

Approval of the Manitoba Government has been given to the application of Sir Reginald Brade for renewal for a year by the Department of the Interior of the priority permit in connection with the development of the Whitemud Falls, on the Nelson River. The attitude of the Manitoba administration was conveyed to Hon. Charles Stewart, Minister of the Interior at Ottawa, by Premier John Bracken, of Manitoba, and Hon. Donald G. McKenzie, provincial Minister of Natural Resources.

A priority permit in favor of this company was issued following the adoption of a resolution in May 1929, by the Legislative Assembly of Manitoba, approving the Provincial Government's proceeding to advise the Minister of the Interior to entertain the application and grant the priority permit. In the interval, Sir Reginald Brade and his associates have proceeded diligently with the further study and investigation of the project necessarily preparatory to initiating a definite program of construction, and he has submitted to the department extensive engineering reports and data covering studies made.

◆ BRITISH COLUMBIA ◆

The conference on matters affecting forestry, which was held in Ottawa last fall at the call of the Hon. Charles Stewart, and which was attended by Hon. F. P. Burden and E. C. Manning, assistant chief forester, representing British Columbia, is now bearing fruit to the advantage of the forest survey of British Columbia. The Dominion Department of the Interior is to give the province the advantage of the services of two eight-men parties to engage in the survey of the annual increment in the matter of timber in the province.

Scanlon Elected Powell River President

M. J. Scanlon, of Minneapolis, was recently elected president of the Powell River Co., at the annual meeting of the board of directors of the company, which was held at Vancouver. Mr. Scanlon will succeed the late D. F. Brooks in the chief executive office of the company which the late Dr. Brooks pioneered and developed. The new president an-

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nounced that the policy of the company would be unchanged. At the annual meeting Edward Brooks and Paul A. Brooks were elected vice-presidents, S. D. Brooks remains executive vice-president, and A. E. McMaster general manager. The Powell River Co. directorate has been a closed corporation since the company was formed.

Hon. W. J. Mann, member of the Legislative Assembly of Western Australia, and eleven New Zealand delegates to the Empire Press Union Convention in London, were recently the guests of the Powell River Co. on a visit to the large pulp and paper mill which sends such a large percentage of its product to the Antipodes. The newspaper men passed through Vancouver en route to the Convention, and the Powell River Co. took advantage of their visit to bring them in their private launch up the coast to the pulp and paper plant where they were the guests of the company for the day.

In recognition of the successful research into the reasons for the discoloration of pulp carried on for more than a year now, the Powell River Co. has requested the governors of the University of British Columbia to accept a second grant of $5,000 for continuation of the investigation. The grant is offered without solicitation and solely because of the important progress made in this work by Professor Wilfred Sadler, head of the department of dairying in the agricultural faculty, and Dr. Blythe Eagles, his assistant.

New Board Factory at Victoria

Manufacture of insulating board from waste material of shingle mills is to be undertaken in Victoria by the Sidney Roofing and Paper Co., according to a recent announcement by R. W. Mayhew, the president. The new product will be manufactured in a special factory to be erected immediately on the Industrial Reserve at a cost of $200,000. Mr. Mayhew stated that experiments with various saw mill wastes have been in progress for sometime, and highly satisfactory reports had been received from Springfield, Ohio, where samples had been submitted to expert testing. The board is half an inch thick, light in weight, strong, rigid, and light brown in tint. It will be produced for structural and industrial purposes, Mr. Mayhew explained, giving ideal protection from heat and cold.

Judgment has been reserved by Justice Fisher, Vancouver, in an action by Pacific Mills, Ltd., against Union Steamships, Ltd., claiming $7,500 for the loss of a scowload of kraft pulp when the scow was sunk in collision with the S. S. Catala in Johnston Straits on October 3 last. Allegations of negligence were denied by the defendant company, and a countercharge of negligence against the tug Chieftain towing the scow was made in reply.

Out of a total of 2,000,000,000 feet of logs cut for all purposes in British Columbia last year, approximately 75,000,000 feet were used in the two pulp mills of the British Columbia Pulp and Paper Co., according to Lawrence Killan, managing director. About half of the company's log requirements are bought on the open market, a quarter is cut in the company's own timber limits, and the balance is purchased from contractors whose operations are carried on entirely for the company's benefit. The two mills are operating at capacity, producing a total in excess of 200 tons of pulp per day.

Reeve R. C. MacDonald of Coquitlam Municipality has announced that there is every likelihood of a pulp and paper mill being established in Coquitlam Municipality by James Rear, of Palo Alta, California.

Fifteen millions for a fiber factory in Finland and twenty millions for a new pulp and paper mill in British Columbia are reported to be the projects of the Backus-Brooks Co., holding company for the Ontario and Minnesota Co., Great Lakes Paper Co., Kenora Paper Mills and other large pulp and paper manufacturing organizations.

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GREFCO is a dry, chrome base cement and is ideal for laying up brick, surface coating, patching and general repair work, particularly where there is heavy slagging action and highest temperatures, Fusion point over 3400° F.

Also ask about STANDARD Silica Bonding Cement, a plastic high temperature cement with a strong air-set. Suitable for bonding fire clay and silica brick, patching and general repair work where slagging action is not severe.

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ENGLAND

Trade Conditions

The situation in the British paper trade is still far from satisfactory, and no improvement is anticipated this side of the summer holiday season, for the period from September to June is the busiest one for British makers and merchants. This year, however, has proved an exception in this respect, for, although the bulk of the business has not been bad, it has been of a disproportionately remunerative nature.

The cause of the depression in this country is put down to the over-production in all the paper-producing countries, combined with big financial slumps and a slacking down of speed in practically all industries. The difficulties have been intensified by the strike of paper mill workers in Sweden, where the workers are claiming an increase in wages of approximately two dollars a week. Britain is Sweden's principal market, and orders are now only possible at dumped prices.

Norway and Finland, however, are reaping the benefit, for our market is unprotected by tariffs as far as printings and writings are concerned, the competition is exceptionally keen. Canada with a still greater surplus than any of the continental producers is supplying at a price lower than any of the others for surplus landed at British ports.

Colonel Sheldon (director of Albert E. Reed & Co., Ltd.), speaking at the annual dinner of the Amalgamated Society of Paper Makers at Maidstone, Kent, as to the future of the British paper trade, said that he had visited many foreign mills, and he was sure that no other country had better or more efficient plants than ours, and the staff and employees could not be equalled. The menace to the British papermaker was the dumping of foreign paper when there was an overproduction in any country, or, as at present, a world's slump in practically all grades of paper. British papermakers did not fear competition but dumping was a condition that no industry could deal with unless it had some legislation that prevented those attacks.

A petition has recently been presented to the House of Commons purporting to be sent by 176 British manufacturers and merchants, urging the repeal of the wrapping paper duty. This petition has already been repudiated by the Wholesale Stationers and Paper Merchants Association, and by the Paper Bag Federation. The president of the Board of Trade was asked if he could state how many of the signatures represented actual British manufacturers of wrapping paper and how many merchants, and, in the latter case could he state how many of the merchants dealt chiefly in foreign wrappings. The reply was that 74 described themselves as merchants; 36 as manufacturers of articles whose raw material is wrapping paper; 18 as both merchants and manufacturers, and the others as users of wrapping paper. None were described as manufacturers of wrapping paper.

Some Depression in the Industry

The general trade depression is beginning to show itself more acutely on the paper industry. On the general printing side, there has been fair activity, which is fortunate as this side provides the greatest tonnage for papermakers. For business printing and stationery the outlook is very poor. Merchants and wholesalers are feeling the pinch more than the makers, because the latter are less dependent upon the smaller printer and user of paper. Many vats are idle in the hand-made mills, and the request for hand-made ledger papers is at an exceedingly low level. Users are tending to economize by lowering the standards of quality, which is considered to have a dangerous significance, for it is always difficult to re-establish higher gradings of quality and cost once the user has become accustomed to lower standards. In some circles it is considered that the hand-made section of the trade has lost a certain class of its business for at least a generation.

dependable valves for
every service
Improved design, exacting workmanship, and quality materials insure dependable valves under extreme working conditions. Powell Steel Valves are made in Globe, Angle, Check, and Gate patterns for working steam pressures from 150 to 1500 pounds.
THE WM. POWELL CO.
2521-31 Spring Grove Ave., Cincinnati, O.
Powell valves

"TENTACULAR" Transmission Belt

EFFICIENCY OVER 98 PER CENT

What is the operating cost of a belt drive on a Beater requiring 100 H. P.?

To answer this question, the efficiency of the drive should be determined, not from indefinite claims, but from actual engineering tests.

We do not merely claim "TENTACULAR" to be more efficient than other drives, but we prove it from unquestionable tests which are at your disposal and from which the above problem, figured in dollars and cents, can be solved.

We do not claim "TENTACULAR" to be positive and absolutely slipless. There is no such thing in the way of belt drive, whether the belt is flat, round or V shaped. But we prove "TENTACULAR" to be nearer to such requirements than any other type of belt drive—and at a smaller cost.

30 Church Street
New York, N. Y.

Alexander Brothers INC.
21 South Street Philadelphia

162 N. Clinton St.
Chicago, Illinois

Makers of all kinds of belts for over 60 years—Sole makers of "TENTACULAR"

Lindsay Spiral Weave Fourdrinier Wires

(Patented Oct. 1927)

Represent the latest idea in paper machine wire cloth.

They prevent grooving of Suction Boxes, scoring and filling up of seams. This overcomes the necessity of planing the suction box covers and adds to the life and tonnage of the wires.

Lindsay Wire Weaving Company

Collinwood Station CLEVELAND, OHIO

Fortunately there is a possibility of increased activity in other directions. Certain publishers are making a wider use of hand-made paper particularly those specializing in private press and limited editions. Most of the mills are still fully occupied in the newsprint section, but costs of production are causing anxiety.

Tremendous expense towards increased efficiency has been incurred, for nothing less than perfection permits profits of any sort to be made. There would be fewer machines at work however were it not for the successful retention of the Australian and New Zealand markets.

Shortage of orders and continental competition are having a repercussion on the woodfree section, prices are at a dangerously low level and there is no hope of an adjustment. Some of the smaller mills are turning to other classes of paper. The wrapping section is not too badly placed, but the wrapping manufacturers are still not so strong on the selling side as the importing agents and distributors and a repeal of the wrapping duties would find their ground unconsolidated.

Support Duty on Wrapping Paper

In view of the uncertainty regarding the safeguarding duty of 16⅔ per cent on wrapping and packing papers, the chairman of the National Association of Packing and Wrapping Paper Manufacturers has prepared a statement on the position of the industry in the course of which he states:

A careful canvass among importers, merchants, manufacturers, and consumers show that the price of imported Kraft paper has fallen at least 30 per cent, and that present-day prices, even after the duty has been paid are lower than pre-war prices by 11 per cent. As regards prices of British paper, the fall has averaged 15 per cent, and in many cases it is as much as 20 per cent.

The customs revenue from imports is given as 1926, £349,418; 1927, £548,119; and 1928, £559,273. It will be seen that the State has derived, and is deriving, a substantial revenue from the duty.

Turning now to the effect upon the British makers, there is not the slightest question about the very great benefit of the duty. The industry was in a languishing condition prior to 1925. Something like 20 firms had gone out of business, and closed their works during the last 15 to 20 years. The duty not only stopped this process but reversed it. Four entirely new wrapping paper mills have been equipped; three have been started, and one is on the point of commencing work. At the same time existing mills have been overhauled and reconstructed and very large sums spent on them. It is naturally very difficult to obtain actual figures of expenditure, but it is easy to trade that well over £1,000,000 has been spent upon these developments. As a result there has been an increase in the production of English wrapping papers by at least 55 per cent, including something like 40,000-45,000 tons per annum of entirely new plant and machinery.

The statement adds that two trade unions concerned support the duty very strongly.

E. G. Bailey Wins Longstreth Medal

At the Medal Day exercises held May 21 in the hall of the Franklin Institute at Philadelphia, Pa., Ervin G. Bailey, president of the Bailey Meter Company, Cleveland, Ohio, and a widely known engineer, was awarded the Edward Longstreth medal by the Institute.

Mr. Bailey received the medal upon the recommendation of the Institute's Committee on Science and Arts in recognition of his many inventions and developments of regulating and controlling devices, and of measuring and recording instruments.

Mr. Bailey who was graduated in mechanical engineering from Ohio State University Class of 1903, is an inventor of note holding many patents on instruments and equipment used in the combustion field. He is a resident of Easton, Penna., and is also President of the Fuller Lehigh Company at Fullerton, Pa., and a director of the Babcock & Wilcox Company of New York.

Designed for Better Beater Performance

SWW

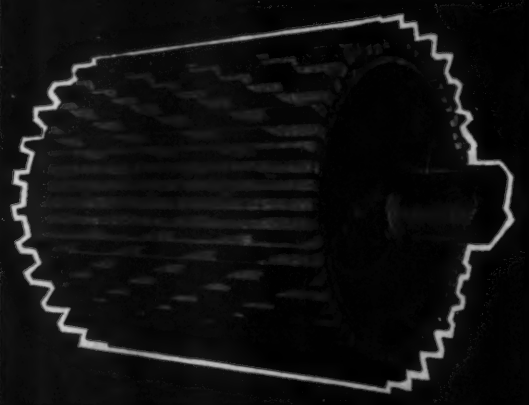
No matter what your beating condition, you can obtain an SWW Bar or Bed Plate that will give the results you desire.

SWW Bed Plates are available in several different types. Permit faster circulation, better hydration, and lessen liability of burning stock.

SWW Bars are made in several types. The SWW Staggered Bar increases and strengthens circulation — provides better stock in far less time. The SWW Corrugated Bar offers all the advantages of the ordinary bar and is much stronger due to its unusual construction.

SWW also make better straight bars, acid resisting bars, etc.

Write for list of SWW paper mill devices.



SIMONDS WORDEN WHITE CO.

Main Office

DAYTON, OHIO

Factories at DAYTON BUFFALO CLEVELAND BELOIT

Link in World Zeppelin Service Finished on Schedule

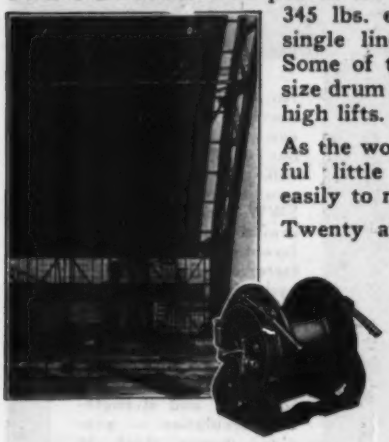
Sullivan Hoists erect largest airship dock

Three miles southeast of Akron, Ohio, air power helped erect the largest airship dock in the world.

The floor is large enough for ten football fields. Yet it is dwarfed by the roof, which could shelter several Graf Zeppelins.

It was in hoisting material for constructing the roof, that air power and Sullivan air hoists lent speed.

Twelve air hoists were put on the job. They weighed only 345 lbs. each, but lifted a ton on single line at 110 feet a minute. Some of the hoists used had oversize drum flanges, to take care of the high lifts.



As the work progressed, the powerful little machines were moved easily to new positions.

Twenty air and electric hoists are

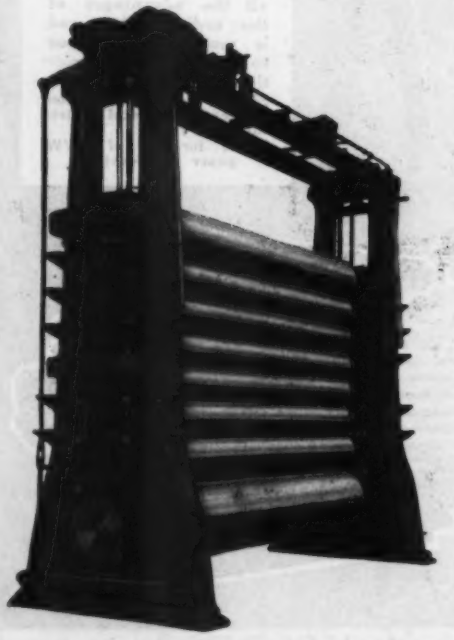
in the Sullivan line. One, two and three-drum hoists, from 3 to 75 H. P. are available, for loading and unloading material for spotting cars, for pulling scrapers, and for many other tasks in and around the plant. *Catalog 76-F, 76-G, 76-J, describe them.*

For information on Sullivan Air Compressors for industry, send for Booklets 83-J, 83-I, 83-H.

Sullivan Air Power Equipment

Sullivan Machinery Company

716 Wrigley Bldg., Chicago 30 Church St., New York



LOBDELL

CHILLED IRON ROLLS

and

MACHINE CALENDER STACKS

Specified on your new machine or for the new rolls for your old stacks insures rolls of maximum hardness and perfect finish.

Calender stacks are equipped with either Electric Motor, Hydraulic, or Ratchet Lift, all operated from the floor.

Improved Oiling Systems either completely circulating with oil filters and sight feed—Ring oiling closed end boxes—or a combination of both.

LOBDELL CAR WHEEL COMPANY
Established 1836
WILMINGTON, DELAWARE

PACIFIC COAST

WASHINGTON

The Crown-Willamette Paper Co. is constructing a cut-off plant at Cathlamet on the Columbia river about two miles west of the town where logs that do not permit of rafting and which formerly were sent to Oregon City on barges will be cut. It is expected that a capacity of 50,000 feet a day will be provided in the new plant which will employ 25 men. The Pacific Machine Works is installing the boilers and operation will start about July 1.

The book-paper mill of the Cascade Paper Co. West Tacoma, has closed indefinitely and a receiver has been appointed to handle the affairs. It is a 50-ton mill.

The Bates Valve Bag Co. has opened offices in the Joseph Vance building, Seattle, from which point northwest business will be handled. Ray Brown is in charge.

New Water Supply for Anacortes Mill

When voters of Anacortes authorized a water supply bond issue of $500,000 in an election May 6, the Fidalgo division of the Puget Sound Pulp & Timber was thereby assured a sufficient water supply for future operation, the water to be piped 18 miles from the Skagit river, with a 300 million gallon emergency supply for local industries. The Puget Sound Pulp & Timber Co. had guaranteed purchase of water to the amount of $28,616 annually.

A feature of this new water supply will be a filter unit with a daily capacity of 5,000,000 gallons, with a 20-inch industrial main leading from the filter to supply 6,000,000 gallons daily to pulp and paper mills when needed.

Activities of the Anacortes paper mill have recently included shipments of pulp to Bordeaux, France, when in May 600 tons were loaded at this dock; to Genoa, Italy and to Oslo, Norway. The mill has been making 60 tons daily of strong bleach pulp but with the new water supply will increase this output.

The Port Angeles Western railway which serves the industrial shipping in the territory has recently added eighteen specially constructed cars with side racks for hauling pulpwood to mills in the Olympic peninsula which include Olympic Forest Products Co., Washington Pulp & Paper Corp. and the Fibreboard Products Co. Both the sawmill and the pulp mill of the Olympic Forest Products company will be ready for operation in June as all the pulp machinery has been delivered. The Minton vacuum dryer and other machine units are now being placed. Harold T. Fretz who was for some time with the Cascade Paper Co. at Tacoma, has accepted the position of control chemist at the Olympic Forest Products plant.

R. S. Wertheimer, manager of the plant of the Longview Fibre Co., states that the new fiber container unit of the plant will probably be ready for operation by the middle of June, ready for the summer vegetable and fruit market.

CALIFORNIA

Pacific States Paper Trade Ass'n

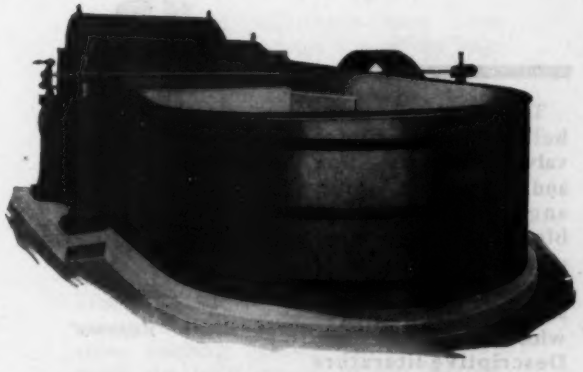
E. A. Doran of Blake, Moffitt & Towne, San Francisco, was elected president of the Pacific States Paper Trade Association convention held at Del Monte last month. George I. Tompkins, Sierra Paper Co., Los Angeles, was made executive vice president, and district vice presidents were elected as follows: Northwest, J. W. Thompson, Blake, Moffitt & Towne, Seattle; Northern California, H. S. Bonestell, San Francisco; Southern California, W. E. Taverner of Taverner & Fricke, Los Angeles. Charles Kahn of San Francisco was elected secretary-treasurer.

Horizontal Type Agitator Pump

CENTRIFUGAL PUMPS
AGITATOR PUMPS

The number of repeat orders for agitator pumps, which we have received during the past few months, is the best indication of the satisfactory service these agitators are giving.

HAYTON PUMP & BLOWER CO.
Appleton, Wisc.



Built for the Job Ahead

Dayton High Speed Beaters were among the very first high speed types offered the paper industry. The manufacturers of Daytons knew then, as well as now, the problems of paper making—and their proposals are made with a technical foresight. Nine Dayton High Speeds, like the one above—61" dia. x 60" face, with cypress tub, recently went into a well known mill. Technical foresight plus mechanical perfection made the sale. We ask your inquiries.

The Dayton Beater & Hoist Co., Dayton, Ohio

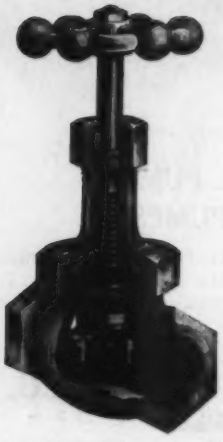
Eastern Representatives
Mansfield, Bolton & Kent.
501 Fifth Ave.,
New York City

Western Representatives
F. H. Godfrey,
415 Lewers St.,
Seattle, Wash.

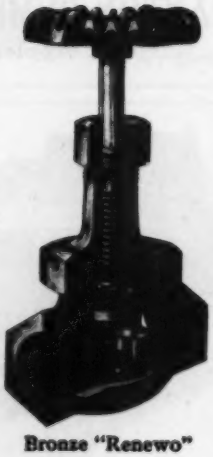
DAYTON
High Speed Beaters

Why don't Beaver's teeth wear out?

Because they automatically renew themselves. As the teeth show signs of wear, more tooth grows out to take the place of that which has worn off.



Iron Body "Ferrenewo"



Bronze "Renewo"

The complete Lunkenheimer line includes valves of bronze, iron and steel; gate, globe, angle, cross, check, blow-off, non-return, pop safety and relief valves; lubricators, oil and grease cups; cocks, whistles, fittings, etc. Descriptive literature will be sent upon request.

Renewability of parts subject to wear is a prime factor in the long life of Lunkenheimer Valves. The measurement of all parts is accurately gauged in manufacture, positively assuring that any replacement part will be exactly the same size as that which is to be renewed.

This feature coupled with the characteristic sturdy over-all construction of Lunkenheimer Valves means a practically permanent installation, with continuous satisfactory performance, infrequent repairs and low maintenance expense.

Lunkenheimer Valves are an investment that yields gratifying returns in long-time, low-cost service.

Distributors located in all industrial centers, carry Lunkenheimer Valves and Engineering Appliances in stock. They will serve you promptly.

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK CHICAGO BOSTON PHILADELPHIA
PITTSBURGH SAN FRANCISCO LONDON
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK

LUNKENHEIMER VALVES

193-58-67

This meeting is reported to have been one of the best held by the association and offered opportunity for mill men and merchants to talk over problems on a common ground. W. B. McWaters, manager of the Zellerbach branch in Portland, and president of the association for the past year, presided at the sessions.

Among the interesting speakers was Frank E. Floyd, secretary of the National Paper Trade association, who after explaining the activities of the national association in establishing a twine and cordage division, received the support of the Pacific group in whatever the national decides in the matter.

O. W. Mielke, president of Blake, Moffitt & Towne, Portland, discussed the "Advantages and Disadvantages of Coast Mills Establishing a Suggested Scientific Mark-Up for the Resale of Their Products," stating that this plan had been operating with success in the wrapping paper field but that it would need further development in other lines.

Louis Colton of the Zellerbach Paper Co., San Francisco, in his Address, "Simplified Practices," was strong for fewer and more uniform standards of paper lines and favored the idea of assisting the Federal Trade Commission in any plans for such simplification.

This idea of simplification of paper trade methods was the dominant note in a number of addresses and in fact was one of the salient points in discussion on the various programs. M. R. Higgins was chairman of the committee on Trade Practices and this committee is making every effort to co-operate with federal suggestions on this subject. H. L. Zellerbach gave support to the idea in his talk on Simplification of Printing and Wrapping Papers. Mason B. Olmstead also had for his theme "Uniform Methods of Merchandising."

"Curtailment of Unnecessary Expenditures for Sales Promotion and Advertising Departments" was advocated by Victor E. Hecht, who called attention to the great waste in paper advertising, this being especially true of mill advertising. He spoke, however, in favor of highly educational advertising and readable booklets on subjects of interest to printers and advertisers and named a number of these printed pieces which he considered of value.

Other speakers who took prominent part in the various discussions of the programs included: George Olmstead of S. D. Warren Co., Chicago; F. O. Fernstrom of the California Fruit Wrapping Mills, Pomona, Cal.; H. L. Wollenberg of the Longview Fibre Co., Longview, Wash.; Guy H. Bechett of the Beckett Paper Co., Hamilton, Ohio; Geo. W. Houk, Hawley Pulp & Paper Co., Oregon City, Oregon; R. A. McDonald, Crown-Willamette Paper Co., San Francisco; Harrison R. Baldwin, Hammermill Paper Co., Erie, Pa.; A. B. Galloway, Oregon Pulp & Paper Co.; Salem; Max Oberdorfer, St. Helens Pulp & Paper Co., St. Helens, Ore.

I. Zellerbach presided over the banquet and voiced the thought which was evident in all sessions and in the mind of most of the speakers—that the paper manufacturers and the distributors are becoming more closely related in their aims and efforts and are more co-operative in spirit now than ever before in the history of the industry on the coast.

Sydney L. Willson, president of the American Writing Paper Co., Holyoke, Mass., was a welcome visitor at the convention following a custom which he has practiced for several years in attending the west coast annual meeting. He spoke encouragingly of business conditions in the immediate future.

"Skid Packing" was discussed in an interesting way by W. B. Reynolds, General Paper Co. of San Francisco, the speaker evincing no doubt but that this method will be adopted by mills as it is favored by all concerned, the non-returnable skid to be given preference. It is said that savings in time and labor can be made up to 90 per cent in some cases. Mr. Reynolds, who is chairman of the committee studying this problem, recommended that 3000-pound skids be adopted and that other standardized operating conditions be given attention.

George I. Thompkins made such excellent recommendations on certain phases of the subject "Credits and Collections," that he was appointed to head a committee to study this matter further with other members to be appointed by local

Stop bearing troubles with Absorbed Oils

Trace back a few bearing failures.

You'll find lubricants have "run away" leaving bearings dry, or the bearings have failed because the lubricant didn't stand up under service. In all cases failure meant lost production, shorter machine life and higher repair bills.

Absorbed Oils offer your equipment a new lease on life. A special film oil prevents metal-to-metal contact in the bearings, and acts as an absorbent for a lubricity oil which provides the necessary "slipperiness." The film base besides keeping bearing surfaces apart, holds the lubricity *oil in the bearing*. This double action eliminates bearing wear and oil drip.

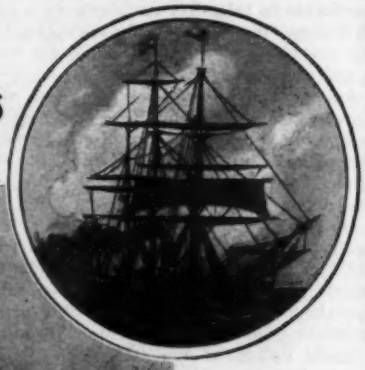
Houghton engineers will be pleased to have you call upon their knowledge and experience. Write us about your problem.

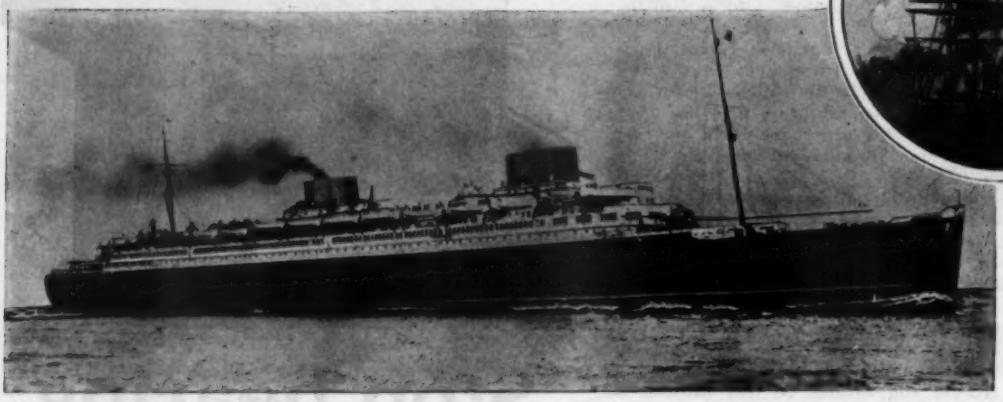
A product of
THE HOUGHTON LINE

152

E. F. HOUGHTON & CO.
PHILADELPHIA, PA.
AND ALL OVER THE WORLD

In felts as well as ships





THE great ocean liner, Europa, recently crossed the Atlantic against strong headwinds and heavy swells in four days and 17 hours.

Seventy-two years ago, when Asa Shuler and J. W. Benninghofen formed the partnership that is still in existence and making paper felts today, the record time for the same crossing was a little over nine days.

Time makes many changes. Experience stands back of all progress.

Woven into every Hamilton Felt is the experience gained by three generations of the same families. Is it any wonder that these felts take out water in more than usual quantities; that they save on the coal pile; that they reduce down time for washing; that they give more than ordinary wear and service?

To try these felts is to use them on all your machines. Talk to the Hamilton Felt Man who calls on you. Ask him to specify the felt that fits your individual needs exactly.

SHULER & BENNINGHOFEN

HAMILTON, OHIO

The Miami Woolen Mills

Established 1858

Hamilton Felts

Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

chapters from San Francisco, Los Angeles, Portland, Spokane and Seattle-Tacoma.

Crown Zellerbach Occupies New Building

The beautiful new building of the Crown Zellerbach Co. just completed at 343 Sansome street, was occupied last month and now houses the entire executive staff. The building is twelve stories high and contains about 65,000 square feet of rentable space, the owners occupying practically five floors including some space used by allied firms. An interesting phase of this beautiful modern building is that it was reconstructed from a building erected many years ago and the remodelling and modernizing went on without inconveniencing tenants occupying offices there. About one year was consumed in completing the work.

The board room of the building has been the subject of much interesting comment because of the beautiful mural paintings which adorn its walls, these consisting of a series of twelve plaques by Warren Chase Merritt depicting the history of papermaking through all its processes. All lighting is modernistic in effect and style.

Louis Bloch, chairman of the board, will occupy a suite on the eleventh floor, as will also I. Zellerbach, president of the corporation, E. M. Mills, A. B. Martin and J. D. Zellerbach, executive vice-presidents, and M. R. Higgins, chairman of the executive committee.

Sales offices of the Crown Willamette Paper Co. are also located in the building with R. A. McDonald in charge.

Arthur W. Towne, advertising manager of Blake, Moffitt & Towne, was appointed chairman of the committee on arrangements for Advertising Achievement Week on the Coast, May 25-31.

J. B. Thomas, recently with the plant of Pacific Mills, Ltd., at Ocean Falls, B. C. as sulphite expert is again in his former connection with the Crown-Willamette plant at Floriston.

Pacific Coast Mills Organize

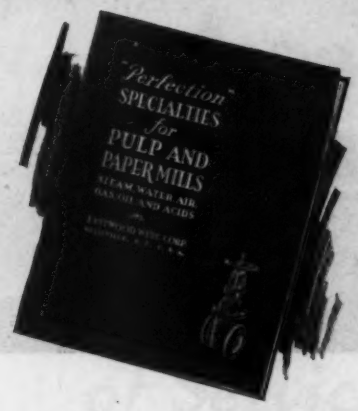
The Pacific Coast Association of Pulp & Paper Manufacturers is the name given to an organized group formed at Del Monte following the convention of the Paper Trades Association. This association is the culmination of a tentative organization which has been sponsored by a committee consisting of William Howarth of the Everett Pulp & Paper company, Geo. W. Houk of the Hawley Pulp & Paper company and Max Oberdorfer of the St. Helens Pulp & Paper Company. J. L. Murray acted in the place of Mr. Howarth at the Del Monte meeting as he has been active in assisting with the new movement and Mr. Howarth was unable to be present.

The plans are to have a meeting in Portland late this summer at which time officers will be elected and permanent plans and objectives of the association outlined. George Houk heads the nominating committee, with Max Oberdorber and R. A. McDonald as other members. Only manufacturers of pulp and paper will be eligible for membership, converters and distributors of paper being ineligible. It is said that there are at least eighteen plants qualified for membership in the new association.

P. Swan of Portland, interested in the new rice straw plant at Richvale, for the Pacific Coast Pulp & Paper corporation, states that the company expects to have this plant completed September 1 with a production capacity of 40 tons of wrapping paper as the initial output with possibly bond paper production on schedule later. C. A. Kieren is in charge of construction.

OREGON

J. H. Hanny, who has been superintendent of the West Linn plant of the Crown-Willamette Paper Co. for a number of years, but who is now transferred in a similar capacity to the Camas, Wash., plant of the company, was the guest of honor at a luncheon meeting in Oregon City May 29 when



Have you received your copy of this new catalog of Eastwood "Perfection" Valves?

ASK us to send you *your* copy of the new Eastwood "Perfection" Valve Catalog recently published—if your copy hasn't arrived in the mail. Even Uncle Sam's Post Office isn't perfect, we know.

And we certainly want you to see that Catalog. It gives you much valuable information on many *new* or *improved* fittings that you may need right now in *your* mill.

Eastwood "Perfection" Valves have been standard for many years. They're even better now with numerous important changes indicated by our constant research.

All backed by our 53 years of experience with the special operating conditions in pulp and paper mills.

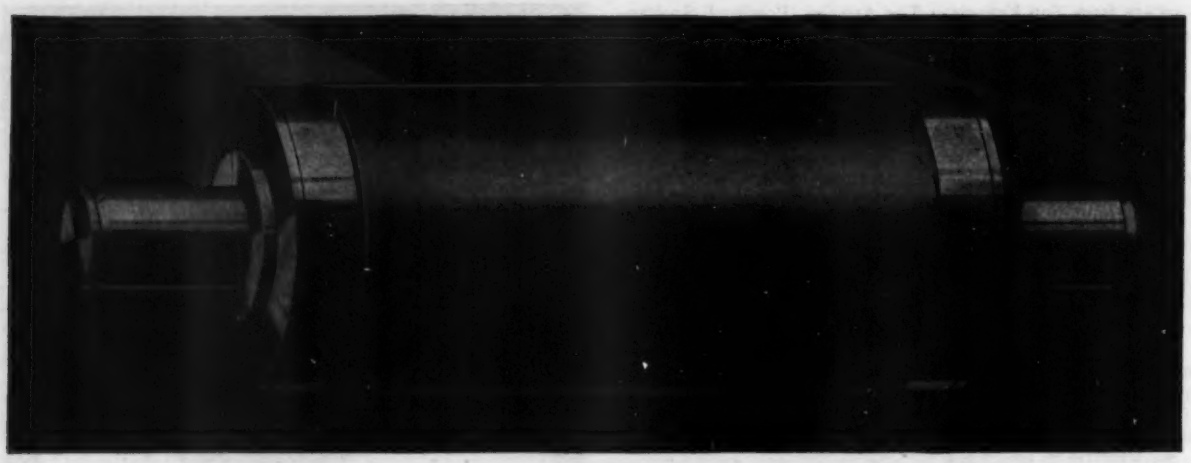
EASTWOOD WIRE CORPORATION

(Established 1877)

Belleville, N. J.

"American Paper Made On American Wires"

EASTWOOD
"Perfection" WIRES
"Perfection" VALVES



Perkins Calender Rolls

No CALENDER *can be better than the* ROLLS *in it*

When you specify Perkins Calender Rolls you not only receive rolls built exactly to your specifications—the rolls contain a priceless ingredient—long experience.

Perkins Roll business is the largest in the world and the fact that the Perkins Roll shop is also the largest in the world indicates the preference Perkins Rolls receive throughout the paper industry. This longest and broadest experience means high finishing qualities.

Perkins builds Calender Rolls — Cotton, Paper, Embossing, Chilled Iron — to meet exactly your production requirements.

B. F. Perkins & Son, Inc., Holyoke, Mass.

TRADE MARK REG US PAT OFF.

Cotton Rolls
Paper Rolls
Embossing Rolls
Chilled Iron Rolls
Granite Press Rolls
Glassine Supercalenders
Web Supercalenders
Friction Calenders
Embossing Calenders
Sheet Calenders
Platers
Mullen Paper Testers
Tensile Testers
Ventilating Fans
Rag Cutters
Stock Cutters
Paper Dampeners
Bleach Ejectors

the Chamber of Commerce and the Local Kiwanis group paid tribute to him as a valued citizen. A. Bankus, vice-president of the Crown-Willamette company was present from San Francisco, and added his commendation for the loyal services of Mr. Hanny and his continual progress.

The Oregon Pulp & Paper Co., Salem, announced late last month that it had prepared plans for a two-story concrete addition to its plant at an estimated cost of $60,000 for the building.

Paper mill property of the Coos Bay Lumber Co. near Coos Bay which was formerly built as a paper plant but which was forced to close several years ago because of insufficient water supply, has been sold to the Port Orford Cedar Products company, at a cost of $500,000. The buildings, of reinforced concrete, are in good condition having been in use for warehouse purposes. The new owners did not announce their plans in regard to the purchase, but it is known that experiments in the manufacture of insulating board have been carried on at intervals and that such tests are being conducted at Springfield, Ohio, at present.

Bingham Pump Co., Portland, manufacturers of many kinds of pumps, including paper mill equipment, moved into a new $100,000 plant late in May. The company is installing pumps in the new $2,500,000 plant of the Fir-Tex Insulating company at St. Helens which will be in operation this summer.

Defunct Paper Company Sued

A suit was filed against the defunct Northwestern Pulp & Paper Co. of Astoria and its directors on May 23 by C. Schuebel of Oregon City, who seeks to recover $500 paid for stock in the concern, and he also asks judgment of $100 assigned to him by another man who purchased stock. This is a test case and the decision of the court is awaited with interest by many other stockholders, two of whom have total claims of $100,000, it is stated.

In promoting stock sales for the proposed new plant at Astoria, it was understood that 20 per cent of the funds raised was to be used for operating the mill and 80 per cent was to be kept on deposit to be returned to the stockholders in the event that the mill was not built. It is alleged that $250,264.66 was collected from the sale of preferred stock and that only $39.17 remains.

The Oregon Pulp & Paper Co., Salem, had suit filed against it May 22 in circuit court, charging that cinders from the smokestacks were proving damaging in effect. Walter Winslow, on behalf of the Salem Bar association, filed the complaint and asked for a permanent injunction restraining the company from permitting any further spread of cinders over the city. The condition has been the cause of discussion at intervals over a period of time, it is stated, with no seeming improvement attempted, and merchants in various lines of business have suffered losses on this account, the suit alleges.

Whitney C. Morden, industrial analyst, addressed the Portland Shipping Board on the growth of the pulp and paper industry on the Pacific coast at a meeting held in Portland May 19. He told the shippers that there had been a 90 per cent increase in the capacity of paper mills in the northwest in the six years preceding 1930 and 122 per cent increase in pulp mills in the same period. The first paper mill in Oregon was in Oregon City and turned out 1500 pounds a day from rag material. This mill, Mr. Morden stated, was the start of the Crown-Zellerbach corporation of today.

The large paper machine in the Lebanon plant of the Crown Willamette Paper Co. which was moved from the Camas, Wash. plant this spring, was put into operation about

ORR

Extra Days of Service

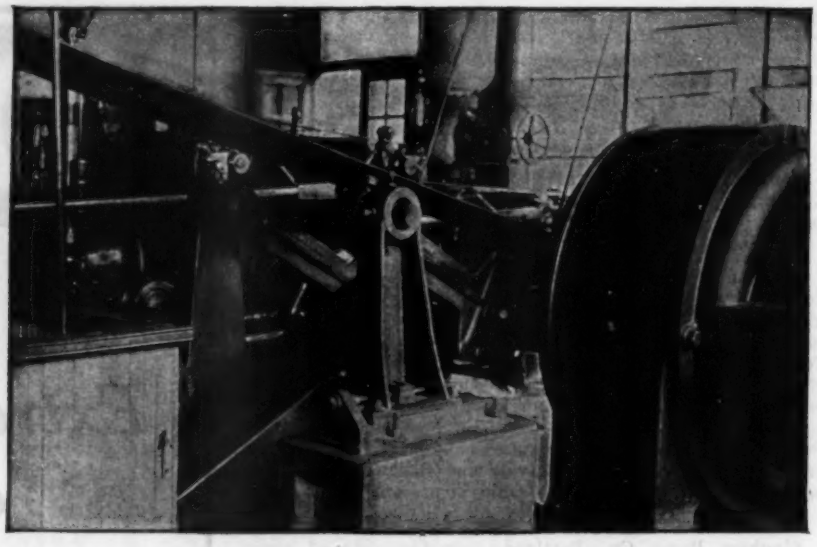
Many mills that have taken the slight trouble required to investigate can vouch for the truth of this statement . . . which mills, by the way, are enthusiastic Orr users and Orr boosters.

The line is complete . . . contains the exact length, width, and texture your particular machine must have.

An inquiry will bring an Orr felt specialist qualified to suggest the particular felt that will remove the most water . . . AND DO IT FASTER.

The Orr Felt & Blanket Co.,
Piqua, Ohio

FELTS



Switch to the LENIX *and save money*

LET'S assume you are about to replace the belt on a long open drive. Don't do it unless you positively must. Switch to the LENIX and save money.

Saving in floor space is taken for granted but in addition:

you save in actual belt footage bought.

you save by putting off the next replacement because the LENIX protects the belt.

you save in bearing replacements and in the cost of lubrication because the LENIX operates with minimum tension.

you save in power because the load is carried with an efficiency of 98% or better.

Switch to the LENIX as others are doing every day and save money.

Some Recent LENIX Sales Involved:

1-h.p. unit for a Gating Press drive
3-h.p. unit for a Screw Conveyor drive
5-h.p. unit for a Printing Press drive
7½-h.p. unit for a Fan drive
10-h.p. unit for a Crusher drive
75-h.p. unit for a Vacuum Pump drive
75-h.p. unit for a Compressor drive
75-h.p. unit for a Beater drive (two)
105-h.p. unit for an Oil Engine-Compressor drive
150-h.p. unit for an Ammonia Compressor drive

F. L. SMIDTH & COMPANY

The Lenix Drive People

Engineers *Incorporated 1895*

225 Broadway, New York, N. Y.

The LENIX Drive

REG. U. S. TRADE MARK

the middle of May, making three paper machines in this mill, the last one being considerably larger than the other two, or almost sufficient to double the capacity of the plant. Twenty additional men were added to work on this machine. A. W. Olson is manager of the Lebanon mill, which has a capacity of 30 tons of sulphite wrapping paper a day.

The Western Board Products Co. of Salem is rushing work on its new plant, with the boiler house finished, railroad siding laid and the 60 by 175 foot addition nearing completion. Installation of machinery will soon start and three shifts will be employed at the start with a capacity of 8 tons a day at first, with a possible capacity later of 50 tons as business develops.

Sitka Spruce Pulp & Paper Co., which operates in connection with a lumber mill owned by C. Mc. Johnson of Coos Bay, with J. B. Wilt as pulp superintendent, is receiving good reports on pulp shipped from its plant to Japan. The company is making about 40 tons a day and has also developed a mid-west market. The operation of the pulp and lumber enterprise under one management is being watched with interest as a problem in economy and the use of waste from the lumber mill.

Elon H. Hooker, president of the Hooker Electro-Chemical Co., who was recently in the West on a visit to the new plant of his company at Tacoma, has announced plans for a summer home in the southern part of Oregon. While on a trip to the vicinity of the Rogue River, Mr. Hooker became so interested in the beautiful scenery and recreational facilities of this region that he negotiated for a tract of 255 acres about sixteen miles from Gold Beach where he will establish a home.

E. H. Nunn has joined the chemical department of the Crown-Willamette Paper company's plant at West Linn. His former connection was with the British Columbia Pulp & Paper Company.

O. W. Mielke, president of Blake, Moffitt & Towne, is heading a civic enterprise, On-To-Oregon, Inc., a non-profit organization designed to boost the state industrially and agriculturally, as well as from a scenic and recreational viewpoint. The campaign of the organization is a pretentious one and the board of directors which Mr. Mielke heads, as well as the general committee, comprises the leading citizens of the state.

ALASKA

Development by Western Mills in Alaska

While official comment has been thus far denied, there is strong evidence that the recent activities of the Cameron-Chandler interests and Zellerbach interests for the establishment of newsprint mills and pulp mills respectively, in southeastern Alaska, may go forward next year, depending on conditions in the industry. Each of the proposed projects would reach an expenditure of probably $15,000,000, it is reported. Applications from the two groups for final water power licenses are to be filed with the Federal Power Commission the middle of June, with official sanction expected not later than August. The two groups concerned would act independently of each other in their enterprises, the Cameron-Chandler group having timber tracts containing about 5,000,000,000 board feet near Juneau, with possibility of a mill being built at Thane.

Zellerbach will develop property near Ketchikan about 200 miles south of Juneau, when their plans are completed, although all financial arrangements and power and water permits, it is said, must be completed before construction work starts.

IDAHO

E. A. Weber has been appointed as superintendent in charge of the plant which as previously announced will be

THE D. J. MURRAY MANUFACTURING COMPANY offers the latest type pulpwood Chipper for quality chips and low power consumption, having approved spout and knife angle, and new bed knife design.

We were the first designers and builders of Direct-connected to Synchronous Motor Chippers and have them running in steady operation. We were also the first to conceive the idea and build the Chippers with roller bearings. Our original installations are six years old and are still running at full capacity.

Our Chipper has the lowest maintenance cost of any Chipper on the market. Ask the man who runs one. Remember that the Murray Company has stood the test of time on its Chipper and that the same is a proven article. Why experiment with others? Any good article is always copied. Our Chipper is no exception. Why accept anything but the tried and proven original?

Why not cut the power costs and upkeep in half? This you can do and we will be glad to tell you how. Furthermore, by using the Murray Chipper, you will get a better chip which should be of considerable interest to you.

Our Chippers are made in various sizes with square or round spouts. Your request for further information will have our immediate attention.

D. J. MURRAY MANUFACTURING COMPANY

WAUSAU WISCONSIN

"M & W"

DEPENDABLE RECORDS INSURE ACCURATE FIT OF REPLACEMENT PARTS

A Superintendent in one of the paper mills, said to us the other day—"You fellows certainly can supply accurate replacement parts quick."

It's a mighty comforting thought to know that whenever you need them, you can get duplicates, on short notice, for any parts of your "M & W" machines, that may have become broken or worn out.

In our big, fireproof vaults we keep complete records of all machines built by us, so that when ordering repairs you are assured of quick service, thus enabling you to start up the machine without a hitch. Loss in production is reduced to a minimum.

Keep the efficiency of your machines at the maximum. Replace M & W machinery with M & W equipment. Do not use a makeshift.

If you have any alterations or repairs in view at present, write us for further information.

The MOORE & WHITE Co.
PHILADELPHIA, PA.
N. PHILA. STA. PENNA. R.R.
PAPER MILL MACHINERY

built at Priest River by the Pacific States Pulp & Paper Co. at a cost of $1,000,000. This will be a 100-ton kraft mill. For the present the executive offices of the company are in Spokane, Wash. C. W. Beardmore is president; A. T. Peterson and Mr. Weber, vice-presidents, and L. E. Winkle secretary-treasurer. Officials expect to have this plant ready for operation next year.

William Brazeau of the Inland Empire Paper Co., Milwood, Wash., has been in San Francisco and southern California points.

Mellon Institute Announces Plans for New Building

Dr. Edward R. Weidlein, Director, Mellon Institute of Industrial Research, Pittsburgh, Pa., has announced, speaking for the Board of Trustees, that the institution is to increase its facilities for serving American industries by a building project that will enable the material expansion of all its research activities. Detailed plans are now being prepared by the architects, Janssen and Cocken, of Pittsburgh, and construction will begin as soon as the drawings are completed, early this fall. The Mellon-Stuart Company, also of Pittsburgh, is the general contractor.

The building, which is to occupy the site of the Institute's Building No. 2, is designed on classical lines, a plain, simple, but massive structure, surrounded by columns. It will provide ample space for housing many more Industrial Fellowships than the 63 that now tax the Institute's facilities to the utmost. The other departments of the institution will be increased in proportion.

In addition to providing a greatly increased number of laboratories, the new building will give more commodious quarters for the general departments. Much more elaborate chemical engineering laboratories are to be available in the new building, and also the fellowships in each specific field of industrial research are to be grouped in suites of rooms so that they can best make use of general apparatus adapted to their needs. Certain rooms will be equipped for specialized phases of experimental technique, such as electrochemistry, spectroscopy, low-temperature studies, radiations, high-pressure experimentation, etc. Other special features to be included are a large lecture hall, a dining hall, an industrial fellowship museum, and an underground garage. For the past five years members of the Institute's Executive Staff have been visiting important laboratories in America and Europe to obtain information on new features in design and equipment.

The new laboratory structure will be of that type of classical Greek architecture known as Ionic. It is to be seven stories high, with monolithic columns along all four sides. The proportions will be approximately 300 feet by 400 feet.

Phoenix Buys Graver Corp.

Announcement is made by the Phoenix Manufacturing Company, Joliet, Illinois, that it has taken over from the Graver Corporation, East Chicago, Indiana, its steel tank, water treating and steel plate construction business, including the plant at East Chicago. The plant will be operated by the Phoenix company under a wholly owned subsidiary company to be known as Graver Tank & Mfg. Corp.

The new organization contemplates a marked increase in the scope of its operations, and will maintain branch sales offices in Chicago, New York, Dallas, Texas, St. Louis, Mo., San Francisco, Calif., and several other large centers. The Graver brothers will be associated with the new subsidiary as officials.

Because of business expansion, the Chicago offices of Robbins & Myers Sales, Inc., Fan and Motor Div. under D. B. Hutchinson, and Robbins & Myers, Inc., Hoist and Crane Div., under W. J. Scott, have moved their offices from 567 East Illinois Street to 1133 Palmolive building, 919 N. Michigan Ave. Warehouse stocks remain at old address.

6 Warren Pumps for handling white water at the Chemical Paper Manufacturing Co.

Another mill completely equips a new addition with Warren Pumps

TWENTY-EIGHT Warren Pumps for handling stock, caustic liquor and white water have been installed by the Chemical Paper Manufacturing Co., in the new addition to their plant. Low cost pumping is helping them to keep their manufacturing cost down.

Operating records from many mills prove that Warren Pumps are built to live up to the claims made for them. Repeat orders have been received from approximately 70% of those installing Warren centrifugal pumps for paper mill service. Other mills have stated that Warren Pumps will be purchased when additional equipment is required.

Designed by engineers thoroughly familiar with pulp and paper mill conditions, Warren Pumps maintain their efficiencies and have unusually low maintenance and operating costs. Warren stuff pumps handle 6% stock smoothly, quickly and without clogging. Write for Bulletins or estimates.

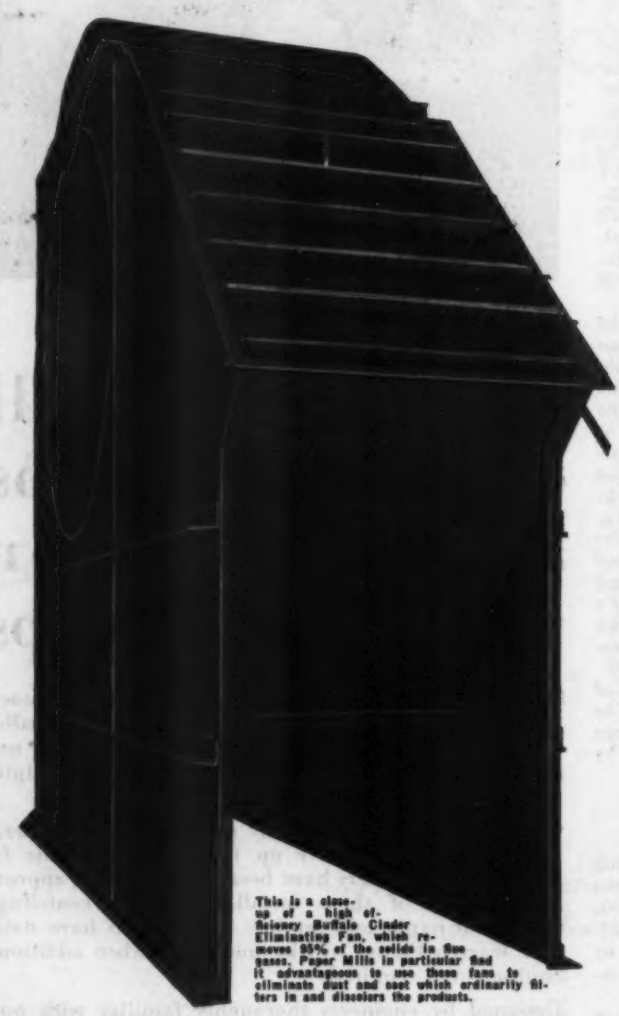
Warren

Steam Pump Company Inc. — Warren Massachusetts

4033

Agencies in all principal cities.

Ask the Old Timers!



This is a close-up of a high efficiency Buffalo Cinder Eliminating Fan, which removes 95% of the solids in flue gases. Paper Mills in particular find it advantageous to use these fans to eliminate dust and soot which ordinarily filters in and discolors the products.

If you want to know how long Buffalo has been building equipment for paper mills—ask the "old timers"! Look up men who've been making paper for forty or fifty years and ask them what they know about Buffalo fans, heaters and air washers.

You'll find many an old mill with Buffalo ventilation in the machine room—and there are lots of new ones using Buffalo Unit Heaters, Cinder Eliminating Fans, Forced and Induced Draft Fans.

With a line of air handling equipment as broad as ours, we can help you on any job involving heating, ventilating or drying. Remember there is a Buffalo Branch Office in charge of a competent engineer near you.

Buffalo Forge Company
213 Mortimer St. Buffalo, N. Y.

In Canada:
CANADIAN BLOWER & FORGE CO., LTD.
KITCHENER, ONT.

"Buffalo"

Heating, Ventilating, and Mechanical Draft Apparatus. Unit Heaters. Air Washers.

ADVERTISING PAGES REMOVED

NEW ENGLAND

Paper Industry Leads in Activity

A second huge fourdrinier is being installed in the mills of Crocker Burbank Co. Association at Fitchburg, Mass. Remodeling of the No. 8 mill is proceeding to take care of this addition which will give this company two of the largest book paper machines in the industry. It will have a width of 200 inches and duplicates another 200-inch giant already installed in this same mill. Wiley & Foss have the contract for remodeling to accommodate the new equipment.

The foregoing is typical of New England mill conditions. Not that 200-inch machines are common, but it is the settled policy of New England mills to gradually replace obsolete machinery and we find that the common criticism urged against New England textile mills that they are on the average far behind the time in equipment cannot be laid at the doors of any branch of paper manufacture, with few exceptions. The newsprint mills are typical of conditions in this regard. One of the largest mills in the territory, Great Northern Paper Co., is steadily replacing its old machines with up to the minute equipment and each replacement though rarely requiring much if any more space, invariably enlarges the Great Northern's total output. Having as low production costs as any mill in the industry, as low, we believe, as many Canadian mills, Great Northern has been able to earn its dividends with enough to spare even present prices of news, so that from its surplus it is able to finance all repairs, expansion or new equipment, having no bonded indebtedness, no preferred stock, and so far as is known no bank loans.

A survey of activity in various New England foundries was recently made by a metal trades paper and the interesting conclusion was arrived at, that while textile, stove and radiator, machine tool and jobbing foundries were active less than 5 per cent of normal capacity, paper mill machinery, the sole important exception, showed better than 75 per cent production with individual units such as Rice Barton & Fales of Worcester producing at full capacity.

Brown Co. Introduces New Paper Product

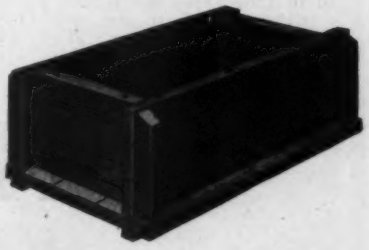
Duracel, the paper on which the Brown Co., laboratories have been diligently experimenting and improving over a period of many months, has been widely introduced to the trade during the past month when samples were sent broadcast to potential customers.

This paper is not new in the strict sense of the word, for many electrical companies have been acquainted with its possibilities as a competitor of rope paper. It is now being spoken of highly as a tag stock and apparently the range of weights in which it will be available gives it infinite possibilities. Although an all pulp stock, it has the great strength and durability characteristic of rope and jute paper. In the lighter weights it has proven of great merit for cable insulation insuring a high degree of conductivity to the wires through which high voltage current is passed, by minimizing losses.

The Bath Iron Works at Bath, Me., formerly builders of paper and pulp machinery including magazine wood grinders and now chiefly a shipyard, have just launched a $750,000 yacht with Diesel engine for Logan Thomson, vice-president of the Champion Coated Paper Co., Hamilton O. Each engine has 425 hp., the vessel is 191 feet in length, carried a crew of 21, has a speed range of 15 to 17 knots and will be one of the finest vessels of her class on the Great Lakes where it is understood Mr. Thomson plans to have her taken.

A huge blimp from the Goodyear Zeppelin factories was officially christened "The Neponset" on Wednesday evening, May 28th in the presence of the Governor of Massachusetts, the President of Bird & Son Inc., and other official dignitaries,

WOOD TANKS



We are equipped to build any kind of a wood tank. Specializing in Cypress and Redwood, we also make a great many tanks of Western Fir, Cedar, Eastern White Pine, Oak, Long leaf Yellow Pine and other woods. Every Stearns Tank is manufactured in our own modern tank factory by experienced men.

A Stearns Tank is a Long Life Tank because it is built of the right kind of wood for the specific use it is to be put to.

Let our engineering department help you.

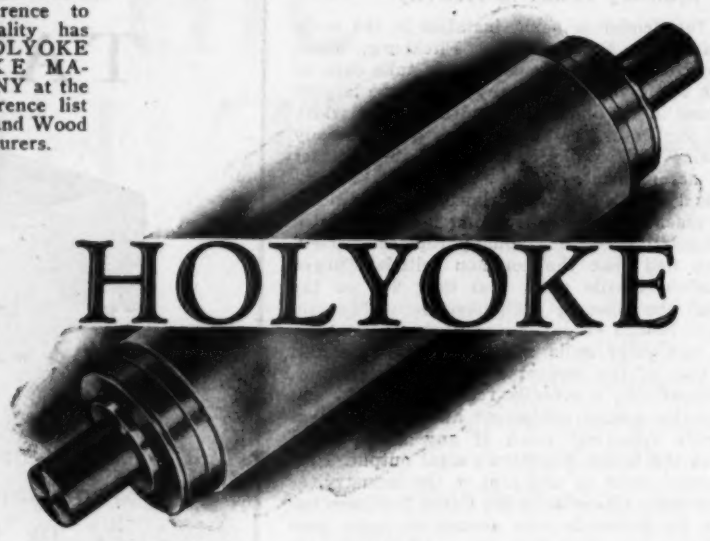
The A. T. Stearns Lumber Co.
NEPONSET, BOSTON, MASS.

STEARNS TANKS

PIONEERS SINCE 1863 IN THE MANUFACTURE OF PAPER MILL AND WOOD PULP MACHINERY

LEADERSHIP

Unswerving adherence to standards of quality has kept the names HOLYOKE and HOLYOKE MACHINE COMPANY at the head of the preference list of all good Paper and Wood Pulp manufacturers.



UNIFORM

YOU can always count on HOLYOKE Cotton and Paper Rolls being of the same high quality—UNIFORM. Whether or not the order is rush, HOLYOKE Rolls will deliver the UNIFORM, long-life results you have the right to expect and demand. HOLYOKE Rolls are precision rolls—not theoretically so—but actually. By using HOLYOKE Cotton or Paper Rolls you obtain a higher quality paper of whatever grade you are running, **uniform** in finish throughout.

Write HOLYOKE MACHINE COMPANY, Holyoke, Mass., Manufacturers of Super Calenders, Platers, Cotton and Paper Rolls, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors.

The HOLYOKE MACHINE COMPANY

FOUNDED 1863

the ceremony taking place near the Bird plant in East Walpole. The blimp which has been taken over by Bird & Son for the summer will travel all over New England visiting hundreds of cities and towns and will be that company's contribution to the Massachusetts Bay Tercentenary Celebration this year as well as inaugurating a superadvertising campaign for Bird & Son's Neponset products.

The Boston School Committee has purchased from converters annual school paper supplies at figures under those of last year. Manila paper, Manila and white envelopes, ruled stock blank books, etc., were involved. The most successful bidder was the J. L. Hammett Co., who obtained $43,034 for paper on which they were low bidders. Others successful were Boston Envelope Co., and Edward E. Babb & Co.

Further Declines in Mill Supplies

In general the market for mill supplies is again weaker in New England. Old rope is most conspicuously so, two cuts of $5 per ton being effected by the leading consumers so that purchases are being made on a basis of 3.25 ex dock on foreign and 3.75 f.o.b. eastern shipping points for No. 1 domestic. Leading fiber mills are buying strings at $1.05 per 100 pounds delivered New England points a reduction of $2 per ton.

Bagging remained quiet and unchanged, but the Boston waste paper market was off $1 per ton again at $4.50 f.o.b. cars on mixed paper with a cut to $3.50 predicted, and news at $6.50 to $7 was off 50c. Books were reduced $1 per ton at Fitchburg early in May and as of June 2nd another reduction of the same amount was announced. The delivered price to three important book mills in that vicinity now ranges from $1.25 to $1.35 delivered.

In wood pulp, kraft for board mill use has been contracted for last half shipment from Scandinavian countries at $1.90 dock, and one board mill is negotiating for a Swedish brand at $1.75 dock. It is understood that Pacific Coast bleached sulphite has been sold for shipment at $3.10 Atlantic dock, last previous sales being at $3.25. New England book sulphites are quoted at $3.25 to $3.50 and while the No. 1 writing paper quality sulphites have sold at $4.50, considerable very good No. 2 sulphite is selling at the usual differential.

Coal has weakened sharply towards the close of May owing to considerable distress tonnage at Hampton Roads. Nut and slack for stoker powered plants can be bought as low as $4.90 f.o.b. cars Boston.

President Roger D. Smith of the S. D. Warren Co., authorizes the statement that after extensive tests of sulphite pulp from the Pacific Coast made in the mills of the Rainier Pulp & Paper Co., the S. D. Warren Co., has elected to use the splendid long fibered pulp made on the west coast and have become interested as investors in the Olympic Forest Products Co., who will supply them with sulphite pulp. The use of this pulp it has been assured by the Warren management will further fortify the quality of Warren's Standard Printing Papers. However, it is not the present intention of the Warren Company to manufacture paper on the Pacific Coast. Ultimately it is possible that the manufacture of sulphite at Cumberland Mills will be entirely discontinued and the mills diverted to some other use.

In this year of depression, though the paper industry of New England has been admittedly least affected, still it is uncommon to find production greater than for the same period last year. The Penobscot Chemical Fibre Co., of Great Works, Me., producers of bleached sulphite and of soda pulp, have actually produced and shipped more pulp for the first five months of 1930 than for the same period of 1929.

Costs formed the principal subject of discussion at the annual Spring meeting of the New England Paper Merchants

The Mirror!

A SHEET of paper reflects the quality of the wire on which it was made!

A smooth, even surface—unbroken by wire marks or holes and of uniform thickness throughout—indicates a wire of accurate weave which runs straight and smooth on the machine!

Choose a wire which will reflect, in the paper you make, the high quality which will hold customers and bring new ones.

Many of the world's leading paper makers —mills making the best of every grade from tissue to board—use Tyler Fourdrinier Wires.

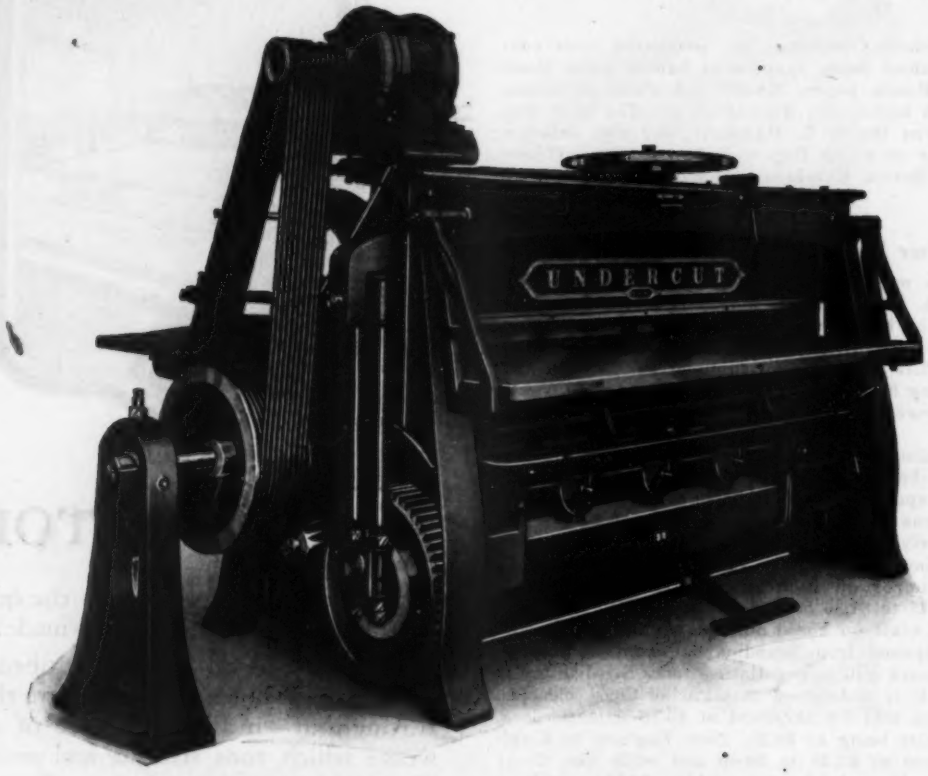
Tyler Wires have an earned reputation for running straight and true—for producing high-grade paper! They assure uniform dewatering and even deposition of pulp. They give long, dependable service!

Send for samples

The W. S. Tyler Company
Cleveland, Ohio

TYLER WIRES

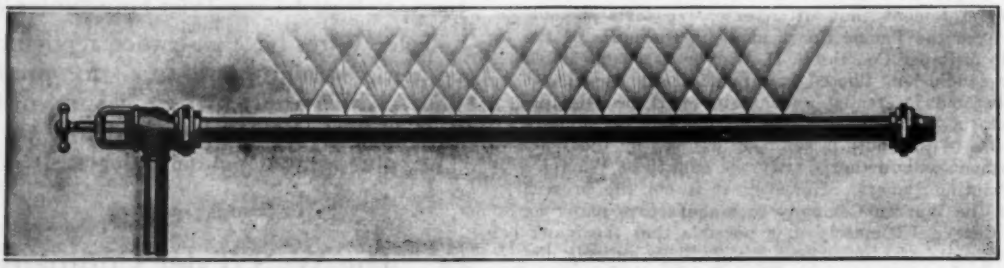
PAPER MILL MACHINERY



THE UNDERCUT TRIMMER

One of our high efficiency products universally adopted by leading paper mills.

For over a century we have been building paper mill machinery and the accumulated experience gained in our 100 years of service to pulp and paper mill men is yours for the asking—no obligation.



The Rain Storm Shower Pipe

The Smith & Winchester Mfg. Co.

ESTABLISHED 1828

South Windham, Conn.

PAPER MACHINERY—PAPER CUTTERS—PAPER BAG MACHINERY

Association held in Springfield, Mass., last month. The dual cost factor, the per order charge and the per cent of overhead to be borne by each transaction were emphasized by Floyd Blackman vice-president of the New England Association, while Mr. Blackman's father, Arthur W. Blackman, national vice-president presented a humorous bit of satire on the propensity of paper merchants to cut prices. There was a talk on credits by A. H. Chamberlain, national assistant secretary and by William Rourke on need for member support of association activities. It was apparently the concensus of merchant opinion that this is no time for pursuing the always dangerous policy of nonadherence to credit terms and is a time to limit the merchant credit responsibilities to a reasonable point, rather than following the common policy of holding the bag for both manufacturer and consumer.

George W. Wheelwright Paper Co., Leominster, Mass., has placed on the market a new Vellum Bristol called Flametone in five new brilliant colors and has appointed distributors in various territories. Edward B. Dik, former treasurer and purchasing agent of the company has resigned.

From 80,000 to 100,000 cords of pulpwood are expected at the Portland Woodhandling Co.'s plant owned by the International Paper Co., and that of Bancroft & Martin both in Portland Harbor. What makes this year's movement of particular interest is that the first Russian wood will be shipped to Portland. A considerable part of the International Paper Co.'s wood at Portland this summer will come from Newfoundland. Hollingsworth & Whitney Co., Parker Young Co., Oxford Paper Co., S. D. Warren Co., are others receiving wood from the Maritimes. The Great Northern Paper Co., has received some foreign wood through Searsport, Me.

The American Scantic Line steamer Chickasaw with a cargo of chemical wood pulp for Portland and Boston made a record crossing from Gothenburg Sweden in 10 days and 20 hours.

The Rogers Fibre Co., with main plants at Bar Mills and Poland, Me. have sold its leatheroid division at Kennebunk, Me., to the National Vulcanizing Fibre Co., of Wilmington, Del. Apparently only the stock and good will are included in the sale for the plant and water rights remain with the Rogers Fibre Co., and it is hoped by the company's management that a new industry will be found to occupy the premises.

Engineers of an equipment manufacturing company are planning to provide sufficient suction blast and nozzle intake to properly handle the china clay cargoes at Mystic Terminal Co., at Boston. The Mystic Terminal Co., has been equipped with a suction apparatus for sometime but its operation to date has not been wholly successful in unloading clay cargoes from Fowey, successful that is as compared to hand method.

Details regarding the new machine of the Chemical Paper Mfg. Co., which recently began production, indicates that the Associate Mill management eventually hopes to secure 45 to 50 tons of paperboard daily. The new machine trims 93 inches and is gradually being worked up to its capacity. Patent coated will be made on this machine although other boards can and will probably run from it. Chemicals 72-inch cylinder is at present idle and in process of being rebuilt to greater capacity and along modern lines. There is also a 60-inch machine.

Oxford Paper Co., has awarded contract to Morton C. Tuttle Co., Boston, for the construction of additions necessary at its plant for a new power house. Charles T. Maine & Co., of Boston are the engineers. The equipment will

Thoroughly cleaned felts stay clean longer

UNLESS every trace of dirt, sizing, and other foreign matter comes out in the washing of your felts, they will quickly become dirty again. Frequent, costly shut-downs will be necessary. Unnecessary wear and tear on felts will result.

Oakite will speed the washing and rinsing of your felts and assure a thorough job. This effective material cleans safely; removes every particle of dirt without harming the fibres in any way.

It rinses easily and completely. Felts are left soft and as absorbent as new; remain in service for longer periods.

Our nearby Service Man can give you complete information on the way in which Oakite is saving time and reducing felt replacement costs in other mills.

Write us and ask to have him call. No obligation.

Oakite Service Men, cleaning specialists, are located in the leading industrial centers of the United States and Canada

Manufactured only by
OAKITE PRODUCTS, INC., 16A Thames St., NEW YORK, N.Y.

OAKITE
TRADE MARK REG. U.S. PAT. OFF.
Industrial Cleaning Materials and Methods

1864 1930

"Excelsior" Felts

For EVERY GRADE of PULP & PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made *the first endless paper machine felts manufactured in America.*

Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

KNOX WOOLEN COMPANY
CAMDEN, MAINE

Sold by
BULKLEY, DUNTON & COMPANY,
75-77 Duane Street, N. Y.
and direct

1,000,000,000

In 38 years of design and manufacture of water filters and softeners, Hungerford & Terry have installed an aggregate daily capacity of more than one billion gallons.

This experience has enabled them to aid paper and other manufacturers to improve their products and reduce their costs of production by the proper treatment of that important material—water.

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consist of B. & W. boilers, Foster Wheeler walls, and Foster Wheeler Corporation, Aero Unit System pulverized coal burners.

The new power house purchased by Strathmore Paper Co., Mittineague, Mass., from the American Writing Paper Co., is ready for hydroelectric operation. It is said to have cost Strathmore $300,000 and to provide a potential current of 2,875 k.v.a.

Dard Hunter's new paper mill at Lime Rock, Conn., the only plant in this country where handmade paper will be made is now in production. No machines are used and methods are employed similar to those used abroad in the making of fine handmade papers. Mr. Robertson from Maidstone, Kent, England, will take charge of the work. He is thoroughly familiar with the processes through his own experience and inherits the craftsmanship from generations of papermakers. Yale students, Henry Ford and many others have signified their intention of inspecting the plant.

New Pulpwood Rates

The Maine Central R. R. has published new pulpwood rates which will become effective June 20th on pulpwood. The new tariff is a compromise in that the minimum carload weights are lower than at first proposed by the carrier, but the rates follow the original proposals. It is provided that the carload minimum for cars 36 feet or over shall be 50,000 pounds and under 36 feet 43,750 pounds excepting cars numbered M.C. 7,101 to 7,200. Actual rates formerly quoted per cord and now per hundred pounds will be 4c on hauls from Bath, Me., to Brunswick, Pejepscot, and Lisbon Falls where mills of the Pejepscot Paper Co., are located; 5½c per 100 pounds from Portland to Livermore Falls mills of the International Paper Co.; 6c from Portland to the Oxford Paper Co., Rumford; Hollingsworth & Whitney Co., Waterville; and International Paper Co., Riley, and 4c from Calais Me., to the St. Croix Paper Co., Woodland Me., the latter rate being unchanged from previous tariffs but new minimum car loads applying.

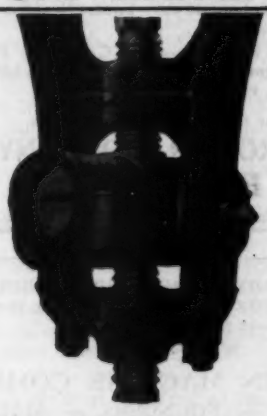
The New England Paper & Pulp Traffic Association's complaint against all rail rates on bituminous coal from Clearfield and other counties of Pennsylvania to northern New England points will be heard presumably later in the year, a postponement having been practically assured.

The anticipated attack of the Boston & Main R. R. on wood pulp rates within New England, an effort which they are supposed to have been preparing looking towards reductions of such rates, has failed to develop. No new tariffs have been issued or proposals submitted to the New England Freight Association.

John E. Hall, paper broker with a substantial business among publishing houses which he had maintained ever since he entered business for himself, 25 years ago, passed away on May 31, at his home in Somerville, Mass. He was 75 years of age and a life long resident of Somerville. Before entering into business, he was with Rice Kendall Co., one of Boston's old time paper houses. He is survived by a son, a daughter and two brothers.

Further information regarding the Oxford Paper Co.'s new power plant indicates that they are planning one of the finest and most modern in New England. There are to be four B. & W. boilers, fully equipped with water walls, air heaters, superheaters and economizers. These will be fired by Aero unit pulverizers made by Foster Wheeler Corp., of Boston and New York, two units to each boiler. Two boilers will at present render enough power and these will be ready by November 1st. Construction of the new plant by Morton C. Tuttle Co., of Boston is under way. The boilers will produce 165,000 pounds steam per hour each and will render 450 hp. each. The present plant fired by stokers will be partly dismantled although some of the most efficient of these

THE "UNIVERSAL GIANT"



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will be retained in reserve. The remaining two of the four pulverizing units will be installed early next year, it is understood. Consumption of coal will be 12,000 pounds per hour per burner.

St. Croix Paper Co., Woodland, Me., is installing in its power plant two Wickes boilers to operate at 90 pounds steam pressure each, and to supply 450 hp. each. They will be fired by two aero unit system pulverizers of the Foster Wheeler Corp. They are the largest units of this company, Type J, with a consumption when operated at maximum speed of 12,000 pounds of coal per hour each. The work has started on foundations and it is expected that it will be ready for operation early in November.

At the Tercentenary Industrial Exhibition September 30 to October 11, the following paper companies will have booths: American Writing Paper Co., Bird & Son, Cambridge Paper Box Co., Crane & Co., Esleeck Mfg. Co., Falulah Paper Co., The Marvellum Co., Strathmore Paper Co., Tileston & Hollingsworth Co., United States Envelope Co. The Exhibition will be held in Mechanics Hall Boston.

National Lignin Products Co.

The National Lignin Products Co. is a new corporation, started by Boston Companies and owning patents to utilize waste lignin from the chemical pulp processes. The officers are: Ralph W. Leach, president, New England representative of the American Engineering Company of Philadelphia; Thomas M. Vinson, treasurer, ex-member of the Massachusetts Senate, Clifford M. Collins. The lignin residue can be molded into a product which is said to compare in all respects with bakelite; can be sold at half the price of such materials now on the market, and can be used for similar purposes such as the manufacture of tiling, radio cases, instrument boards, door cases, etc.

It is reported that a prominent paper company in the East has contracted with the new corporation for exclusive rights to manufacture and use the process and sublicense to other mills. It is said that an experimental mill and sales promotion work is to be started at once.

Large electrical companies have tested the material. The raw material is now an utterly wasted product and is available in all papermaking centers in enormous amounts.

Allis-Chalmers Adopts Group Insurance Plan

The Metropolitan Life Insurance Company has just written what is said to be the largest life insurance contract ever written in Wisconsin, involving a total of approximately twenty million dollars. This contract covers a group insurance plan for about 10,000 employees of the Allis-Chalmers Company, Milwaukee, Wis.

The plan is a co-operative one, both the employee and the company contributing to the cost. Employees who have been with the company at least three months will each participate in two thousand dollars of group life insurance. Employees will also have a total and permanent disability privilege, payable monthly for five years.

The Southern Manganese Steel Company, which until recently has been operated as a subsidiary of the American Manganese Steel Company, Chicago Heights, Ill., has now become a part of the latter company and will be operated as the Southern Manganese Steel Division. This division will be in charge of W. G. Hoffman, and offices have been opened in the Law & Finance building, Pittsburgh, to which point all orders and inquiries should be directed.

The Turbo-Mixer Corporation has leased additional space at 250 West 43rd street, New York City, which will permit consolidating under one roof the general offices as well as the testing and research laboratories. At the same time, production of Turbo equipment will be shifted to new facilities recently acquired at Hudson, N. Y.

Warren Mfg. Co. Now Riegel Paper Corp.

On June 2, 1930, the name of The Warren Manufacturing Company, operating mills at Riegelsville and Milford, N. J., with head office at 342 Madison Avenue, New York, was changed to Riegel Paper Corporation.

Fifty-seven years ago The Warren Manufacturing Company was established by John L. Riegel, his son Benjamin Riegel, and three associates. Previous to the establishment of The Warren Manufacturing Company, John L. Riegel manufactured paper under the firm name of John L. Riegel and Son. Both firms were operated until 1912 when John L. Riegel and Son was absorbed by The Warren Manufacturing Company.

For many years the products of The Warren Manufacturing Company have been known as Riegel's Papers. The line of papers produced includes jute tag, envelope, lightweight jute paper, rope tag and specialties, also "Riegel's Jewel Brand" glassine paper. The change in name has been made to eliminate confusion caused by the use of a brand name different from the company name. This change will also tend to eliminate the confusion between the old name and other similar names in the paper industry. THE PAPER INDUSTRY is advised by the Riegel Paper Corporation that there will be no change in the organization or its established policies. "The same organization with its improved equipment and enlarged facilities just recently completed will continue to manufacture the same high quality Riegel's papers."

The Hyatt Roller Bearing Co., Harrison, N. J., has appointed C. L. Newby as manager of its western division in Chicago. Mr. Newby has been associated with the company since 1918 as sales engineer on general industrial, oil field, railroad and farm machinery applications.

Appointment of A. H. Sanford as branch manager of the Wilmington naval stores district has been announced by officials of the naval stores department, Hercules Powder Company, Wilmington, Delaware.

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Ask for Bids on Kraft Paper

Bids for furnishing approximately 90,000 pounds of kraft paper have been invited by the Memphis district U. S. engineers to be opened June 12. The paper desired is in two lots of 50 and 30 pound weights respectively. Fifty-six thousand pounds are required of the former and 34,000 of the latter. Delivery is to be made f.o.b. cars at the contractor's mill at New Madrid, Mo.

The heavy kraft paper is used as a separator between the steel forms in which concrete blocks for revetment work are cast. By this means the blocks are cast one on the top of the other with only the paper separating the individual forms. When the concrete base has been set the steel forms are removed and a pile of blocks is ready for use.

Specifications of the paper desired are outlined in the bid announcement issued by the engineers. Delivery of the paper must be completed within 30 days after award of the contract. Lieut. Col. F. B. Wilby, McCall Bldg. is in charge of the Memphis District Engineers office.

Characteristics of Lithium

Some of the characteristics of the metal called lithium are interestingly presented in the April issue of Industrial Bulletin of Arthur D. Little, Inc. Thus it is stated that lithium is the lightest known solid. It is only a little more than half as heavy as water: light enough to float on ether or the lightest gasoline. Cork and balsa wood appear to be lighter than lithium because they contain pores filled with air.

The metal has most remarkable chemical activity of a type to make it useful as a "scavenger" in purifying metals. It is said to be able to remove carbon, sulphur, phosphorus, oxygen, nitrogen and other impurities from alloys and pure metals. It is even claimed that if lithium is melted in an iron vessel, the latter becomes so porous by absorption of the foreign constituents by the lithium, that the lithium trickles through it. Also, that when lithium is melted in a glass or quartz vessel, the lithium reduces the silica to silicon, causing the container to crack.

A few hundredths of a per cent of lithium, added to aluminum or its alloys, is said to produce a degree of hardness not otherwise obtainable. Such an alloy is "Skleron." A small fraction of a per cent of lithium added to lead makes a suitable bearing metal. This is the "Bahnmetall" (railroad metal) extensively used on German railways.

Almost simultaneously, large scale processes for the production of lithium have been developed recently in the United States and in Germany. A cost of $25 per pound in quantity has been mentioned and if this price can be bettered or even maintained in continued operation we may look for many new and interesting commercial applications.

The establishment of national standards for pressure and vacuum gauges was recommended at a general conference held in New York City on May 15th under the auspices of the American Standards Association, 29 W 39th Street, New York City. Thirty-five representatives of manufacturers and users of pressure and vacuum gauges and of technical, governmental and safety bodies having an interest in such gauges were present at the conference.

The Mount Chemical Equipment Co., Lynchburg, Va., announces that its line of special chemical equipment and processes will hereafter be conducted from Lynchburg. The Swenson Company, Harvey, Illinois, formerly held an exclusive agreement covering manufacturing and selling rights in the Mount line.

Stephens-Adamson Mfg. Co., Aurora, Ill., announces the removal of its New York sales and engineering office to 50 Church Street, Room 1360.

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Experiencing a new Pleasure!

A paper mill superintendent says it is a pleasure to pass his stock pump, now equipped with a Tannate Watershed Belt, and not have to stop and fix it as was often required when the pump was driven with a rubber belt.

The Tannate was put in on trial in the face of considerable doubt. But the doubt has turned to pleasure in possession. As a result Tannate has been installed on other drives in this mill.

The great strength and unusual grip of Rhoads Tannate Watershed Belts, together with their *waterproofness* make them a very real economy, year by year.

Perhaps you also doubt the possibility of Tannate Watershed Belting being as good as it is; but remember it is sold under the Rhoads Service Guarantee, and you may find, through a trial belt or two, that there is a saving in both worry and money for you, too.

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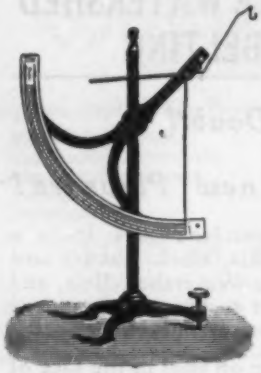
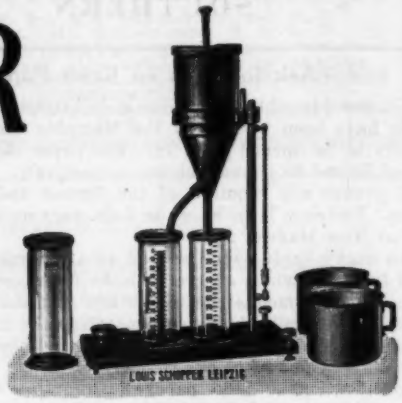
World Standard Paper Testers



All Kinds of Scales



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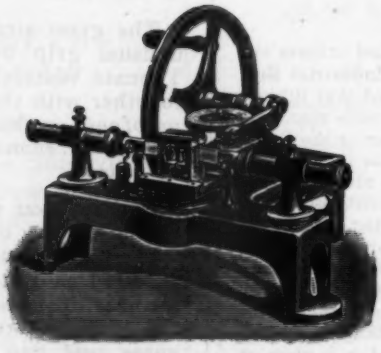

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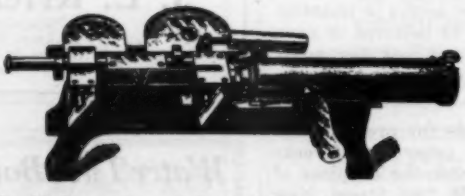
Small Piece Pocket Paper Scale
By weighing a piece 2 in. by 4 in., gives basis weight 25x38, 24x36, 22x34, 500 sheets.



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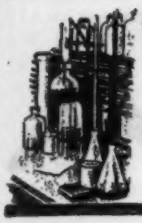
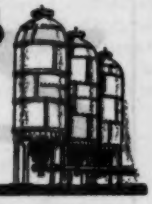


Technical Developments in the Paper Industry



Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Drying Coated Paper

THE most important details, both of a practical and theoretical nature, of the drying of coated paper are described in detail. The proper regulation of drying equipment for drying paper coated on one and on both sides is also discussed. A wet colloidal film of color is present on the paper at the moment drying starts. Water is evaporated from the color film not only by vaporization but also by the capillary suction effect of the paper and by diffusion. These facts are of the greatest importance as far as the duration of the drying process is concerned. When the paper is coated on one side and the coating is not too thick, then the moisture may penetrate even into the untreated surface of the paper and the air will then absorb moisture from both sides of the paper. In this case the behavior is essentially like a thin film of liquid introduced into a drying atmosphere, which film consists on the one hand of an aqueous colloid and on the other hand of a capillary distributed water film or of an aqueous film containing a small proportion of crystalloid, hence consisting of a solution.

The relation between the vapor pressure and the other drying conditions is also discussed. The manner in which the films that are to be dried act as far as vapor pressure is concerned is also described. The colloidal conditions involved are gone into in great detail. The capillary liquid contained in the paper is also discussed from the drying standpoint.

The speed of drying is concluded to have a great influence on the properties of coated paper, if the initial temperature is too high in this process. Crusts are formed on the surface of the paper when dried too rapidly in the cases where gelatin and other similar substances have been used in coating it. Such action is not expected nor observed in those cases where the coating film is very thin. On the other hand, too rapid drying will result in undue strains in the paper, causing contraction, etc. These properties are very closely connected with the nature of the paper itself. They are caused by the fact that different parts of the paper dry more rapidly than ohers.

The nature of the air used in drying is also an important factor. The air must not contain dust. This is particularly important in the manufacture of glossy coated papers and in leatherized paper.

Certain chemical changes, as well as physical, take place during the drying operation. These are often of colloidal character. Changes in color are also mentioned. The necessity for the color to be able to resist the temperature of drying is discussed. J. B. Meyer, Der Papierfabrikant, 1930, pages 17-21.

Recovery of Pulp Waste Liquor

THIS invention is concerned with a process for treating waste liquors, which are obtained in the process of making pulp by digestion of cellulose-containing substances with sodium sulphite or acid sodium sulphite liquor, in order to prepare new digestion liquor in this way. The waste liquors are treated in the usual manner, that is, evaporated, with the precipitation of certain substances present therein, the latter operation taking place either before, simultaneously or after the evaporation itself. The combustible substances in the evaporated mass are burnt in certain cases with the addition of added fuel, with the result that the sodium compounds, which are present in the waste liquor, are converted into sodium sulphide or sodium sulphide and soda. The residue obtained from the burning of the mass is dissolved in water and treated with one or more oxides of such metals, whose sulphur compounds are insoluble in sodium hydroxide, with the result that the sodium sulphide-free solution obtained is finally treated with sulphur dioxide gas or sulphur dioxide solution in the usual manner, after the precipitate has been separated, for the purpose of producing new sulphite liquor. The treatment of the sodium sulphide solution with metallic oxides is carried out at a temperature of 100 degrees C, or over and in certain cases under pressure. Dr. E. L. Rinman, Sweden. German Patent No. 487,219, filed April 15, 1926.

Regulation of Operation of Grinders

WHEN the power fed to the grinder remains constant and also the quality and properties of the wood ground does not change, then the production of the grinder and the quality of the mechanical wood pulp depend to a marked degree on the sharpness of the stone. Furthermore, there is also a definite inter-relationship between the speed at which the wood moves forward in the magazine pockets, the quantity of pulp produced and the specific consumption of power. A new measuring device has been designed, based on these conditions, for continuously recording the speed of the movement of the wood in the pockets of the magazine grinder. It is claimed that the chart obtained from this instrument affords the operator exact, valuable, numerical information at any time regarding the condition of the grinder. It also affords information as to when and to what degree the stone has to be resharpened or whether or not it must be dulled. When this instrument is used, it is claimed that the former method of taking samples of the stock and testing it for the freeness coefficient and the tearing length together with microscopical examination need be only seldom used. This saves consid-

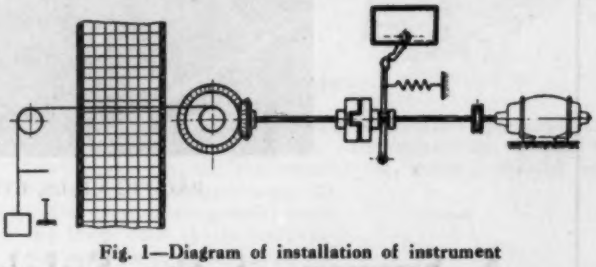


Fig. 1—Diagram of installation of instrument

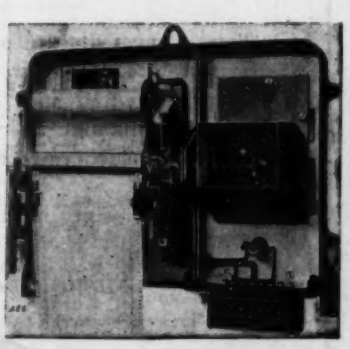


Fig. 2—The instrument

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erable time. The instrument is described in detail as well as its manner of use and the results obtained from it. Dr. W. Brecht, Wochenblatt fuer Papierfabrikation, 1930, pages 43 to 49.

Fuel From Waste Sulphite Liquor

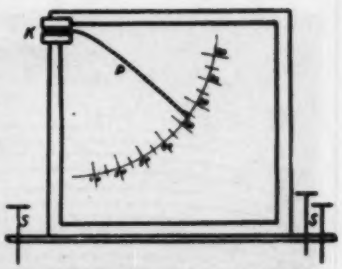
A FUEL is made from waste sulphate liquor and sawdust in the following manner. The sawdust is mixed with the liquor in such concentration and proportion that the mixture on a dry basis contains about twenty-five to sixty per cent of dry materials derived from the sulphite liquor. The resulting mixture is partially dried, and the partly dried mass is then heated with live steam to raise the temperature and to moisten the mass. The moistened mixture is formed into briquets under pressure and these are, thereafter, dried at a temperature not much over 200 degrees C. R. W. Strehlenert, Sweden. United States Patent No. 1,743,985, filed June 16, 1927.

Determination of the Copper Number

THE exact determination of the reducing power of cellulose by means of the establishment of the copper number is still a mooted question. The Koehler-Braidy method is criticized as being little suited for the exact determination of this coefficient. The Schwalbe method, with the modifications introduced by Haegglund, generally gives more accurate results. It is, however, too complicated and requires too much time to be of practical use in the plant laboratory. A new method is described which gives accurate results and is rapid as well. E. Haegglund, Cellulosechemie, volume 11, pages 1-4.

Testing the Stiffness of Paper

THE new tester used for this purpose is built on the principle that a paper strip held horizontally, bends downward under the action of a weight in degree corresponding to its stiffness, that is, it bends more, the less its stiffness. The angle between the imaginary line connecting the point of the free hanging paper strip and the point of support and the vertical axis line is used as a measure of the stiffness of the paper strip. This angle is read off the scale shown in the accompanying illustration of the tester. This angle is greater, the stiffer the paper. Its magnitude depends on the weight of the paper as well as on its stiffness. It is, therefore, highly important that only papers of like weight should be compared. For, when two papers of like actual stiffness but different weight are tested in this apparatus, the lighter paper will appear stiffer due to the fact that gravity is the force that pulls the end of the paper down in this tester. Tests have indicated that difference in weight of less than ten per cent does not have an appreciable effect on the results obtained with this instrument.



The tests are made in the following manner. The paper that is to be tested is cut into strips 15 mm. wide with a cutting machine in the same manner as employed in preparing samples for the tearing resistance test. The length of the samples is 120 mm. The sample is fastened in a metal clamp in a horizontal position to the upper end of the apparatus and hangs down at the right as shown. The scale of the tester is advantageously illuminated at the back by means of an electric light. The point at which the end of the strip comes to rest is read off the scale. Inasmuch as the deflection of the paper strip increases with time, it is essential that all the readings are made within a certain fixed period of time. It was found that fifteen minutes is best and most practical for this purpose. The position of the strip of paper is scarcely changed after it has been in the instrument for ten minutes. An error in time of one or two minutes is of no moment. Dr. E. H. Riesenfeld and Dr. T. Hamburger, Zellstoff und Papier, volume 9, pages 841 to 842.

Importance of Circulation in Digesters

THE author discusses both natural and forced circulation in digesters working both on acid and alkali digestion processes. Various methods and apparatus used to secure forced circulation are discussed. Figure (1) shows the circulation obtained according to the Albenielsen system. This

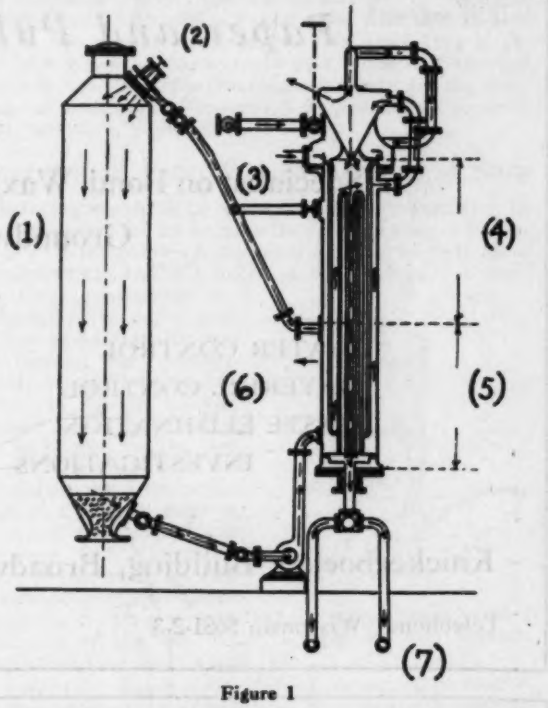


Figure 1

type of digester has been tested in practical operations extending over several months. The apparatus consists of the digester (1), the concentrator (6), which is divided into two zones. The upper zone (4) is the concentrating zone, while the lower zone (5) is the heating zone. A foam separator (2) is provided at the top of the concentrator. The condensate outlet is shown at (7). The concentrator accordingly acts both as a heating and evaporator. The tubular heating coils avoid formation of scale. It is seen that the circulation is secured by means of a pump and that the heating fluid (steam) enters at the top at (3). The use of this system of evaporation and heating affords a digestion liquor at the end of the digestion with a concentration of 24 to 26 degrees Be. This system is characterized by high heat economy.

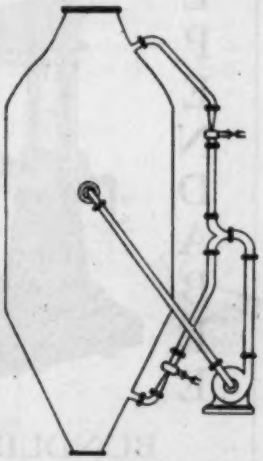


Figure 2

Another system is shown illustrated in Fig. 2, namely the Schauffelberger system. The liquor is heated externally of the digester, this being accomplished either by means of steam injectors, as shown, or by the medium of a heater of the usual type. Circulation is obtained by means of a pump. The digester itself does not contain any internal structure. The liquor is removed from the digester at its midpoint and returned at the bottom or top, or simultaneously at top and bottom. W. Schmid, Der Papierfabrikant, 1930, pages 21-27.

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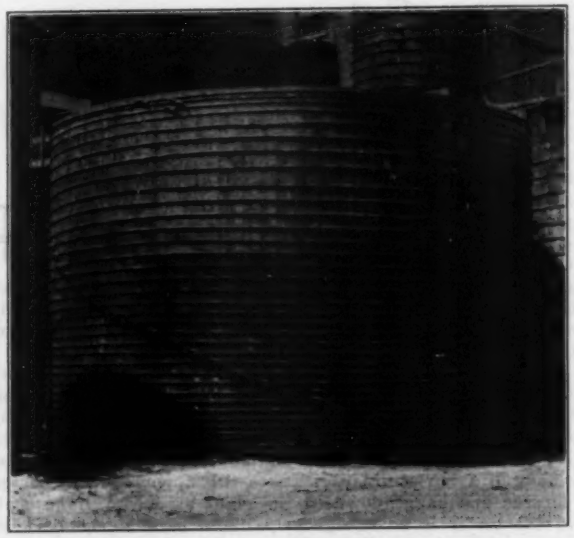

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Water Consumption and Fiber Loss in Papermaking Machines

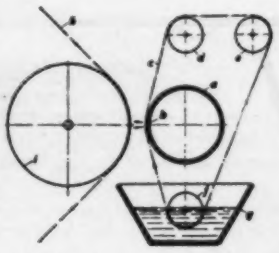
TESTS were made on a number of papermaking machines. The first test was made on a machine making rag paper. The paper has a weight of 65 grams per square meter. The fiber loss amounted to 1.34 per cent. By proper recovery of values from the white water, the loss was reduced to 0.8 per cent. The water consumption of 346 cubic meters per metric ton is high, based on the small production of the machine, namely, 2500 kilograms. Another machine tested made paper containing 65 per cent rag stock. The weight of the paper was 65 grams per square meter. The fiber loss amounted to 2.7 per cent which was reduced to one per cent by recovery of fiber values from the white water. The water consumption amounted to 162 cubic meters per metric ton.

In another case the fiber loss was ten per cent in making a paper of 22 grams per square meter weight. The large loss is assigned to the low weight of the paper. The loss of fibers is less, the thicker the web of films on the wire, which film or web acts as a sort of filter for the white water. Suitable recovery methods reduce the loss to five per cent. The water consumption amounted to 261 cubic meters per metric ton.

A yellow wrapping paper with a weight of 70 grams per square meter incurs a water consumption of 122 cubic meters per metric ton. The paper was weighted with approximately four to five per cent of fillers and this makes the loss high. The latter amounts to 2.6 per cent of filler and four per cent of fiber, figured on the dry paper mass. Fotijew, Bumaschnaja Promischlennost, volume 8, page 30.

Cooling and Moistening Paper Webs

AIR is blown through a fabric soaked with liquid on to the paper web. This is claimed to be a new and effective method of cooling and moistening paper webs and is carried out in an apparatus which is shown in diagrammatic form in the accompanying illustration. The pipe connection (a) is the air pipe, from which the air emerges through a lateral longitudinal slot (b). The air is blown through the pipe by means of a blower. A fabric (c) is passed in front of the slot (b) and this fabric passes around the rollers (d), (e) and (f). The fabric dips into a container (g) filled with a liquid at a suitable point in the arrangement of apparatus. The air current which carries water vapor along with it reaches the paper web (h), while the latter passes over the rollers of a calender (i). Firma H. Kranz, German Patent No. 484,503, filed Oct. 14, 1928.



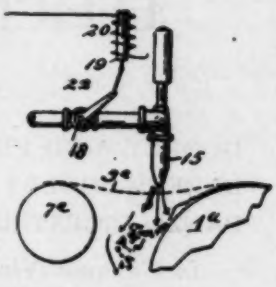
Oakwood Residues for the Manufacture of Paper

THESE residues, which are obtained from extraction plants, are used as fuel in the wet state. The wood in the undressed state is cut up into chips of five to eight millimeters size for purposes of extraction. Tests made on the use of the wood for the production of paper have shown that the wood in this state of purity is suitable for use in the manufacture of ordinary wrapping paper and cardboard. The presence of the bark on the wood, however, introduces difficulties in the production of bleached paper. The content of extractive substances in the bark and the bast is not as great as in the heart wood. It has been determined that if the wood is dressed, more valuable extracted substances are obtained and furthermore, a residual mass is obtained which is suitable for paper manufacture.

The fibers in the latter have a length of 0.71 to 1.25 millimeters and a thickness of 12 to 25 microns. The chips contain about 60 to 65 per cent of water when they are taken from the diffusion tanks. It has been found that this water does not impair the digestion process. It is not necessary to dry the chips. The yield of pulp amounts to approximately 51 per cent for unbleached stock (calculated on the absolutely dry wood in the chips) and approximately 46 per cent in the case of the bleached stock. A yield of 27.7 per cent of fibers is obtained from wood containing thirty per cent of water. It is also claimed that the quality of the paper that is obtained in this manner is better than that obtained from straw pulp. The tearing strength of the paper is approximately 2300 meters as compared with 1300 to 1400 meters in the case of straw paper. The stock that is obtained from this wood waste can be used in the half-bleached condition in the place of mechanical wood pulp for the manufacture of newsprint. Nerechtskij, Bumaschnaja Promischlennost, volume 8, pages 42 ff.

Disintegrator of Paper Web in Breaking of Same

THE arrangement, which is shown in the accompanying illustration, has for its purpose the disintegration of the paper web when it separates in the paper machine, so that there is no accumulation of the paper in the machine. A blast nozzle (15) is employed for disintegrating the paper web, when it separates in its passages through the machine. The blast nozzle directs a current of gas directly against the web at a point in its travel where it is still in the wet state, and this current of air easily disintegrates the paper web. Such a suitable point is that where the paper web passes over from the couch roll (1a) to the first press roll. The blast of gas is arranged at this point in such a manner that the gas impinges against portion (3a) of the web, which bridges the gap between the couch roll (1a) and the roll (7a).

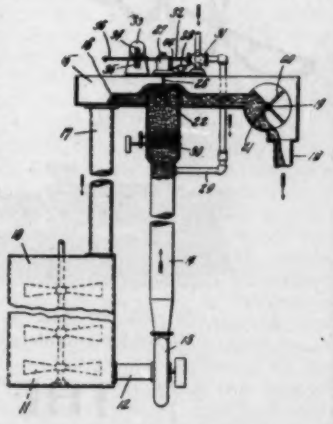


The valve (18), which is provided for the automatic control of the flow of gas is itself regulated by means of a solenoid core (19) which is surrounded by the coil (20). The latter lies in an ordinary open electric circuit, at whose closing the coil is moved towards the core, and with the aid of the lever (22) the valve is opened.

The flow of current through the circuit takes place automatically when the paper web is broken. The blast nozzle is set into operation just as soon as the electric circuit is closed. F. A. Peschl, German Patent No. 485,023 filed August 12, 1926.

Pulp Stock Tonnage Regulator

THE accompanying illustration shows a pulp stock tonnage regulator. The apparatus consists of a receptacle for the pulp stock and provided with an inlet and outlet port. A feeler is located within the inlet port. Means are in contact with this feeler and are sensitive to the contact of the stock entering the tank with the feeler. This results in automatic dilution of the stock so that a mixture of uniform consistency is obtained before the stock enters the tank. Means are also connected with the outlet port for feeding stock from the tank at a predetermined rate. M. O. Schnur, Berlin, N. H., assignor, The Brown Co. U. S. Patent No. 1,744,145, filed Oct. 25, 1928.



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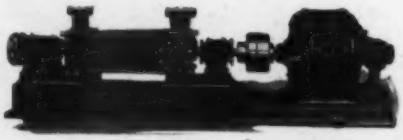

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High Output Beater

THE principles on which the high output beater has been designed are described in considerable detail. Certain experiences obtained in the operation of beaters and data gained in a series of tests were used as a basis for the design of the beater. The author also makes a careful analysis

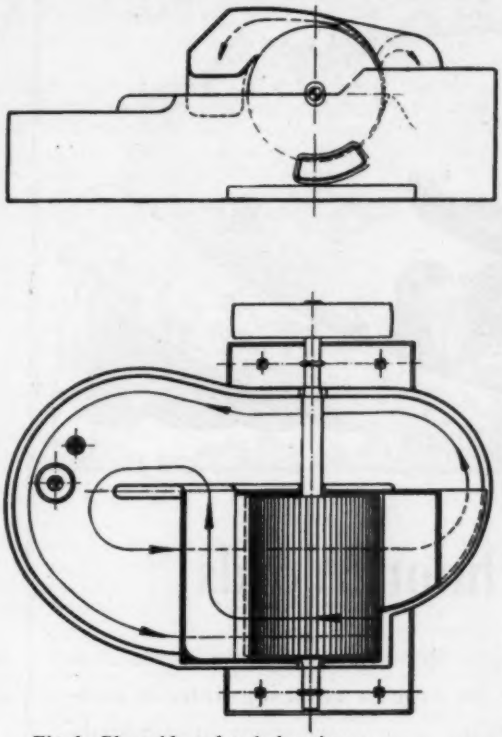


Fig. 1—Plan, side and end elevations

of the consumption of energy in the beating operation and the efficiency of the beating operation proper as compared in its time duration with other operations of auxiliary nature carried out in the beater.

The rapid operating beater is shown in Fig. 1. The beater roll is of comparatively small diameter but is very wide and it rotates in a wide, short beater trough. The stock is

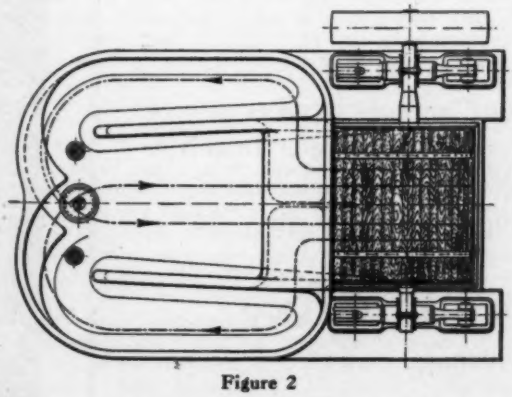
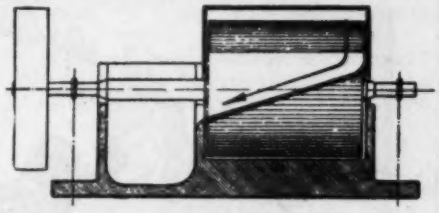


Figure 2

carried over two thirds of the width of the beater over the crown into the posterior portion of the beater trough just as in the regular beater in which a midfeather divides the trough into two parts. The stock that comes into contact with the remaining third of the width of the beater roll is centrifuged over the crown of the roll back into the trough from which it came, in the same manner as in a centrifugal beater. This stock then passes through a transverse conduit which is parallel to the roll and provided with a sharply inclined bottom towards the inner side of the lateral conduit in which a pull is being exerted on the stock carrying it to the beater roll. This results in attaining a cross-mixing effect in stocks of high density as well as simultaneous mixing in



the direction of flow of the stock in the beater trough. This is highly advantageous in instances where the pulp has to be colored in the beater, for it is found that the color can be added at the outer wall of the beater trough, and within a period of five to fifteen minutes, the entire mass of pulp in the beater will be uniformly colored.

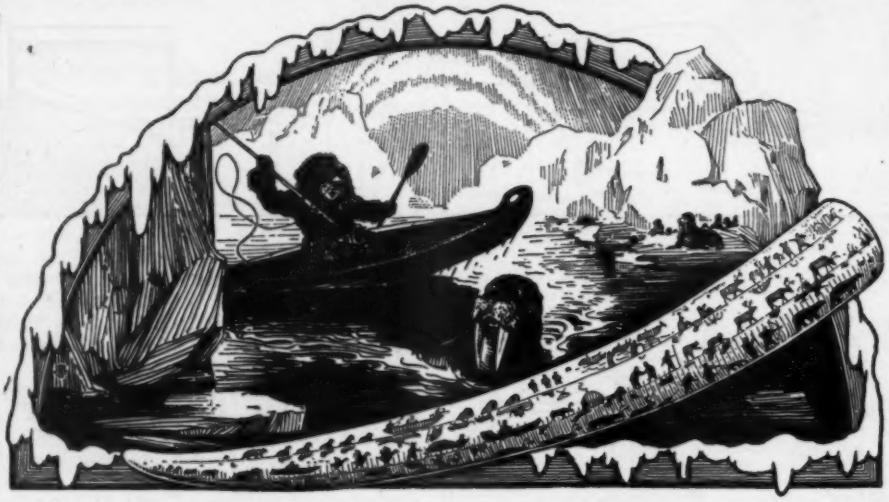
Mention must be made of the fact that the centrifugal throw-back of the pulp over the crown of the beater roll does not entail any additional consumption of power for the reason that all the conditions which result in an increase in the consumption of power in the operation of the beater are connected with loss of stock and loss due to eddy currents and whirling motions of the pulp at the point where the stock enters in front of the beater roll as well as at the point where the stock leaves the roll.

A beater with a three channel trough is also described and shown in Fig. 2. The stock flows to the beater roll through the middle channel, passes between the knives of the roll and the bedplate and is then centrifuged out of the slots in the beater roll into a transverse channel wherein it is mixed. It then flows through the two outer channels of the beater trough. Further details of this beater can be obtained from the original article. H. Mallick, address delivered before the Association of German Pulp and Paper Chemists, Der Papier-Fabrikant, 1930, pages 33 to 41.

New Process of Digesting Pulp

IT is claimed that pulp of a high quality and great usefulness can be obtained with a good yield, which conditions are not attained in the ordinary digestion process, when the digestion of the raw stock is carried out in a liquor which contains at least one oxy compound of the isocyclic series, in which at least one atom of hydrogen in the oxy group is replaced by a metal, for example such a compound as sodium phenolate. It has, however, been found that this process is rather expensive for the reason that the cost of the chemical used is high. The new process, described and patented by the firm of Dr. Otto Strecker, Darmstadt, Germany, in German Patent No. 486,533, includes various improvements which reduce the cost of the process.

Exhaustive tests have shown that it is possible to use over again digestion liquors of the aforementioned character without having to take into consideration their influence on further digestions. However, the direct or indirect recovery of the liquors have neither been provided for nor were they practical in all the digestion processes, which use phenol, phenolates or phenol derivatives and which have been known up to the present time. The replenishment or increase or rather the substitution of the amino ingredient originally contained in the digestion liquor is of practical great importance, for the reason that, as indicated at the beginning of this description, the cost of the oxy-compounds of the isocyclic series, particularly of phenol and also of cresol, it quite high. Inasmuch as new oxy-compounds of the isocyclic series are obtained in this manner, the total quantity of these compounds is sufficient not only to counterbalance the unavoidable losses, but it is also possible to recover these substances in considerable quantities from the waste liquor.



Stories Without Words

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New York, June 2, 1930.

EXPECTED improvement of a concrete nature has not as yet developed in the general business and industrial situation. There are evidences here and there of activity in trade increasing, but such instances are spotty at best, and the market condition of most commodities is quiet indeed with nearly all of the major industries operating on curtailed schedules while suffering from a want of orders and realizing meager profits.

Obviously, the paper industry is feeling directly and acutely the effects of this situation in business generally. There is less paper being consumed, and consequently a narrower demand emanating from consuming quarters for the various classes of paper and board. Some branches of the market are showing fair activity, but it is fair only, and it doubtless can be stated accurately that the paper industry as a whole is in a decidedly dull position—and a very unfavorable one from the standpoint of profits.

Paper manufacturers are competing keenly for orders. In fact, the competition has been carried to a point where, in some divisions of the industry, a condition bordering onto the ridiculous exists; that is to say, ridiculous because it is so very deplorable. Paper manufacturers apparently are forgetting all about costs and profits in their endeavor to corral as much business as they can get; price, it would appear, is a secondary consideration in the mad scramble for orders.

Leaders of the business fraternity mostly are predicting better times. It is emphasized that stocks of practically all commodities have been permitted to get down to exceptionally low levels; that is, in the hands of users and distributors, and it is felt that this in itself will soon lead to broader buying because it is only a question of time and a reassurance of sentiment when consumers and merchants will seek to replenish their stocks. Money conditions are favorable for a revival of trade; building activity is on the increase; the employment situation seems to be improving, and at least there is hope that the tariff question will be settled one way or the other shortly—all of which is expected to aid manufacturing and the movement of merchandise.

Paper industry statistics are commencing to reflect the unfavorable condition of the market. Production of paper in the United States in March was less than that in the preceding month although February is a shorter working month. During March a total of 532,727 net tons of paper and board was manufactured by United States mills, compared with 538,237 tons produced in February, according to identical mill reports to the American Paper and Pulp Association, representing a decrease also of 6 per cent as contrasted with the output in March, 1929. The March production of newsprint, uncoated book, paper board, bag, wrapping, writing, tissue and building paper was below that of the same month last year, whereas hanging paper output showed a substantial gain. Shipments of paper from mills in March amounted to 521,962 tons of all grades, against 542,018 tons shipped in the preceding month. Mill stocks of paper at the end of March aggregated 266,115 tons, compared with 256,654 tons a month before. Newsprint, uncoated book, writing, tissue and hanging papers registered increases in inventory at the end of March as compared with the end of February last. As compared with March, 1929, newsprint, wrapping and bag paper stocks showed decreases. The total stocks on hand for all grades at the end of March were 4 per cent above February this year, and 10 per cent above those for March, 1929.

On the other hand, April production of newsprint in the United States and Canada recorded a gain over the March output, according to figures compiled by the News Print Service Bureau. Total production of newsprint in April in both countries amounted to 338,015 tons, against 320,813 tons produced in March, while shipments from mills were 330,396 tons, contrasted with 318,315 tons in March. Newsprint production in the U. S. in March was 109,967 tons and shipments were 109,346 tons, compared with 113,328 tons made and 109,686 tons shipped in the preceding month, while production in Canada was 228,048 tons and shipments 221,050 tons in April, against 207,485 tons produced and 208,629 tons shipped in March. During April 23,172 tons of newsprint were made in Newfoundland and 1,890 tons in Mexico, so that the total North American output for the month was 363,077 tons.

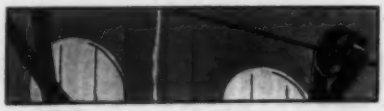
The Canadian mills produced 7,958 tons less newsprint in the first four months of this year than in the same time last year, which was a decrease of one per cent. The United States mills' output was practically the same as in the similar period of 1929. Production in Newfoundland was 10,555 tons or 13 per cent more in the first four months of 1930 than in 1929, and in Mexico 366 tons more, making a total increase of 1,991 tons. During April the Canadian newsprint mills operated at 75 per cent of rated capacity, United States mills at 77.7 per cent and Newfoundland mills at 96.8 per cent. Stocks of newsprint at Canadian mills totaled 45,948 tons at the end of April and at United States mills 24,546 tons, making a combined total of 70,494 tons which was equivalent to 4.2 days' average production.

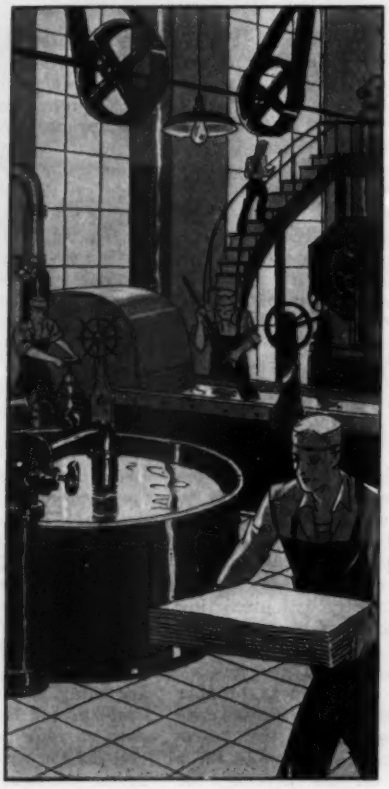
Production of paper board in the United States in March amounted to 229,253 net tons, contrasted with 230,287 tons in the preceding month, and 256,118 tons in March last year, according to statistics compiled by the U. S. Department of Commerce. Board output in the first three months of the current year reached 687,854 tons, showing a decline from the 732,442 tons produced in the same period of 1929. New orders for board received by mills during March called for 220,543 tons, against 217,291 tons in the preceding month; unfilled orders held by manufacturers at the end of March were for 66,870 tons, compared with 71,741 tons a month previously, while shipments of board from mills in March aggregated 225,839 tons, compared with 224,179 tons in the preceding month. Mill stocks of board totaled 68,333 tons at the end of March, showing a slight decrease from the 69,880 tons held at the end of February.

Fine papers are reported enjoying a fair demand, yet the call for supplies is fair only, with buyers mostly limiting their orders to small quantities against direct needs. Prices of most lines of bonds and ledgers are maintained, more especially the high-quality grades. Newsprint is moving into consuming channels in a steady manner, but it is apparent that consumption is a bit below what might be called normal; at any rate, the percentage of increase recorded during the last couple of years is not now being maintained. Nothing further is heard regarding a price change in print paper, and it seems more or less a certainty that no advance will be promulgated for the remainder of this year.

The market situation in kraft paper is smacking of the ridiculous. The price war continues, and if anyone is fully aware of the market level of kraft, he is averse to acknowledging it. Buyers apparently are operating at just about any price they care to bid, so long of course as their ideas are within reasonable bounds. Manufacturers, it would seem, are overlooking the matter of price in their effort to get orders—particularly away from competitors. Tissue papers are in slow demand, and easy quotably. Book paper is in moderate call although the principal movement is against contracts. Box boards are in a dull market position with indications that concessions are being allowed.

from FOREST





to PAPER

ALKALI

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Papermaking Rags

There seems scant question that the present market position of rags for papermaking is altogether in favor of those on the purchasing side. With demand as limited as it happens to be, with supplies close to normal if not fully up to the tonnage ordinarily available at this season of the year, and with dealers and importers in at least some cases pressed to effect sales, buyers have matters much their own way and are occasioned little or no difficulty in obtaining all the supply of rags desired at prices of their own making so long as they bid within reasonable bounds. Some classes of rags—the low grades consumed by roofing paper mills, in particular—are weak decidedly in price, with a further sharp decline having been registered in market levels, and so far as is observed, there is no kind of papermaking rag exhibiting what could be called real price strength in the current quiet market.

On the other hand, it should be said in behalf of dealers, or a large majority of handlers of papermaking rags, that they are not pressing sales. The average rag merchant realizes perfectly that paper manufacturers are feeling the general business and industrial depression, and that they are not using as many rags as ordinarily, and therefore are not eager about buying in a normal way; consequently, it has been learned by experience recently that to exert pressure on consumers avails nothing else than a further lowering of market rates, and most dealers therefore are pursuing a waiting policy in hope that conditions will improve and that when the need of larger amounts of rags develops, more favorable prices will be obtained from paper mills.

The higher qualities are holding their quotable position fairly well, although it is no secret that buyers are succeeding in getting supplies at concessions in some cases. As concerns roofing stock, however, it might well be stated that consuming buyers can "write their own ticket" as regards price. Market rates on such rags have dropped to a point where the lowest level of value that has been known in years now prevails. While roofing rag prices are mainly nominal, owing to a lack of actual transactions establishing values on a definite basis, it is reported that No. 1 domestic roofing stock or cloth strippings are available at 1.35 cents a pound f.o.b. dealers' shipping points, and probably at less, while No. 2 domestic stock is down to around a price level of 1.00c a pound at shipping points. Foreign dark colored cottons have been reported sold to roofing mills at 1.15 cents a pound ex dock New York, and it is just as likely as not that purchases could be accomplished under this price.

Old white cottons are quoted on an average level of 6 cents a pound at dealers' points, with the full range from 5.25 cents to 6.50 cents, depending on the quality of packing, freight, etc. No. 2 repacked old whites are quoted at 2.75 to 3 cents a pound at shipping points, repacked old thirds and blues at 2.50 to 2.75 cents, with a little more asked for extra packing for particular mills, and rough blues at about 1.85 cents per pound. There has been a further decline in prices of old cotton batting, which is reported now available at 2 to 2.25 cents a pound at shipping points.

New cuttings are wanted in spasmodic fashion, with papermakers buying in small quantities mostly and presumably to satisfy urgent requirements. A few grades display relative price steadiness, due principally to their scarcity, but others are available to buyers at concessions. New No. 1 white shirt cuttings are quoted by dealers at around 8.50 cents a pound at shipping points, blue overall cuttings at 6.75 to 7 cents, unbleached muslins at 9 to 9.25 cents, No. 1 washables at 4.25 to 4.50 cents, light silesias at 6.50 to 6.75 cents, and fancy shirt cuttings at 5.25 to 5.50 cents. Probably these prices can be shaded in some quarters, or certainly in cases when dealers are eager to liquidate stocks.

There is little activity in imported rags other than of strict routine character, with importers reporting that in most instances prices ruling abroad are above a parity with the figures obtainable from paper mills in the United States.

Average quotations f.o.b. shipping points and ex dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	8.25– 8.75
White shirt cuttings, No. 2	6.50– 6.75
Fancy shirt cuttings	5.25– 5.50
Washables, No. 1	4.25– 4.50
Unbleached muslins	9.00– 9.25
White lawns	7.75– 8.00
Overall cuttings, blue	6.75– 7.00
Black silesias	4.50– 4.75
Canton flannels, bleached	8.50– 8.75
Canton flannels, unbleached	7.25– 7.50
Shoe cuttings, bleached	7.00– 7.50
Shoe cuttings, unbleached	6.00– 6.50
Light silesias	6.50– 6.75
O. D. khaki cuttings	5.75– 6.00
Mixed khaki cuttings	4.75– 5.00
Corduroy cuttings	3.25– 3.50
Cottonade cuttings	3.00– 3.25
Linens, No. 1 white, foreign	14.00–15.00
Light prints, foreign	4.00– 4.50
Old Stock—	
Whites, No. 1, repacked	5.25– 6.50
Whites, No. 2, repacked	2.75– 3.00
Whites, house soiled	2.00– 2.25
Whites, street soiled	1.75– 2.00
Thirds and blues, rough	1.70– 1.90
Thirds and blues, repacked	2.50– 2.75
Lace curtains	4.75– 5.00
Black stockings	4.10– 4.25
Cotton canvas, No. 1	4.25– 4.50
White cotton batting	2.00– 2.25
Roofing, No. 1 (cloth strippings)	1.35– 1.45
Roofing, No. 2	1.00– 1.10
Linsey garments, foreign	1.50– 1.60
Dark colored cottons, foreign	1.10– 1.20
Blue linens, foreign	3.50– 4.00
Gray linens, foreign	4.00– 4.50
White linens, foreign	7.50– 8.00
Light prints, extra foreign	2.00– 2.25

Rope and Bagging

Market rates of both old rope and bagging have moved to lower levels in a situation characterized by very limited trade activity, reflecting the lack of desire of paper manufacturers for supplies of these materials. Old rope is especially weak in price, with reports telling of consuming buyers being almost entirely out of the market and of some distress selling at sharply reduced figures. It is difficult to determine exactly what the market basis is on old rope, but it is stated that domestic No. 1 old manila rope is being offered to paper mills at 3.50 cents a pound f.o.b. shipping points, and perhaps at less, while foreign old rope is on about this same price level ex dock American Atlantic ports. Strings, too, are under neglect of buyers and are quoted nominally at around 85 cents per hundred pounds at shipping points.

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Papermakers are absorbing some supply of No. 1 scrap bagging, and are reported granting about 1.50 cents a pound at dealers' shipping points for desirable quality packing. Roofing bagging is in the doldrums, and is little short of being a drug on the market, with prices approximately around 85 cents per hundred pounds at shipping points. Gunny bagging is steady quotably and is said to be selling relatively well, with available supplies none too plentiful.

F.o.b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.60– 1.70
Gunny, No. 1 foreign	1.55– 1.55
Scrap bagging, No. 1	1.50– 1.60
Roofing bagging	.80– .90
Wool tares, heavy	1.65– 1.75
Wool tares, light	1.55– 1.65
Manila rope, No. 1 foreign	3.50– 3.75
Manila rope, No. 1 domestic	3.40– 3.60
Sisal strings	1.75– 2.00
Mixed strings	.80– .90

Old Paper

From bad to worse, the paper stock market has been traveling in a steadily downward direction until certain of the low grades, notably mixed paper, are now at a value point where it can almost be said that the material is worthless from a market standpoint. The market truly is demoralized, with heavy stocks hanging over it, and with surprisingly little demand from consuming quarters. Even the several high-quality descriptions which were moving relatively well for a time have become quieter, and prices of these grades now are on the downtrend. The condition, it is asserted, is simply a matter of too much supply, and a subnormal consumption and demand which fail to absorb the stock in the market.

No. 1 old mixed paper is said to have been sold to mills in the East at as little as 10 cents per hundred pounds or $2 per ton f.o.b. New York, while old folded newspapers are available at as low as 30 cents per hundred pounds at dealers' shipping points in the East. Somewhat above these, prices are quoted in the Middle West although the tone of the market hereabouts is weak also. Soft white shavings are in fair call on a price range of 2.50 to 2.80 cents per pound at shipping points for No. 1 packing, and No. 1 hard white shavings are quoted from 2.60 to 3 cents a pound. Heavy No. 1 book stock has declined to a basis of 1.10 to 1.15 cents per pound at dealers' points, and ledger stock is down to 80 cents per hundred pounds for ordinary packing and 1.25 cents a pound for extra quality packing. Manilas and kraft are hard to market and are weak in price. White blank news cuttings are moving moderately well on a price level of about 1.75 cents per pound at shipping points.

The following are quotations named by dealers f.o.b. shipping points, some of which are strictly nominal:

	New York and Chicago
Hard white shavings, No. 1	2.60– 3.00
Hard white shavings, No. 2	2.40– 2.60
Soft white shavings	2.50– 2.80
Colored shavings	.70– .80
Heavy book, No. 1	1.10– 1.20
Crumpled book, No. 1	.85– .90
Ledger stock	.80– 1.25
Kraft No. 1	1.35– 1.50
New kraft cuttings	1.90– 2.00
White blank news	1.70– 1.80
Manilas, No. 1	.40– .60
Manilas, container	.20– .30
Folded news	.30– .45
Sulphite mill wrappings	.50– .60
Old corrugated box cuttings	.35– .40
New corrugated box cuttings	.50– .60
Mixed paper, No. 1	.15– .30
Common paper	(Nominal)

Pulpwood

Seasonal activity of fair scope is reported in pulpwood,

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Machine designed to shred either domestic or foreign pulp

Will shred the lightest or heaviest stock into thin wafers of required size

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122 East 42nd Street New York, N. Y.

100 Tons Kraft Per Day—
58% A.D.

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PRODUCTION . . . .

Kraft	up to	100 Tons
Sulphite	up to	80 Tons
Soda	up to	60 Tons
Groundwood	up to	50 Tons

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With 2 Presses	55% A.D.
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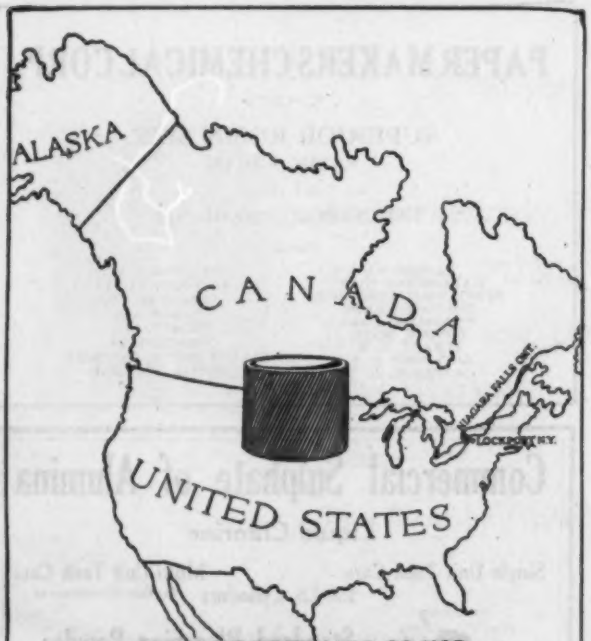

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with the market otherwise ruling quiet. Quotations are about stationary, though the undertone is a bit easy.

Exports of pulpwood from Canada in April amounted to 55,116 cords, valued at $498,471, compared with 133,627 cords of a value of $1,208,001 exported in the preceding month, and 58,706 cords of a value of $512,714 exported in the corresponding month of 1929.

Mechanical Pulp

While the movement of mechanical pulp at present is chiefly confined to shipments against contracts and old orders, quoted rates are fairly well maintained, with the statistical position of the commodity said to be lending support to market values. Domestic producers apparently have little groundwood to dispose of, and grinders in Canada are not pushing offerings, while importations have fallen off to a substantial extent. Consequently, notwithstanding the steady recession in chemical wood pulp values, prices of groundwood seem to be holding comparatively steady on a range of around $30 per ton f.o.b. pulp mills for domestic prime mechanical pulp, and $25 to $30 a ton for Canadian groundwood, depending on the air dry test and the freight to consuming centers.

Production of groundwood in the United States in March reached a total of 106,205 tons, compared with 88,984 tons produced in February, according to identical mill reports to the American Paper and Pulp Association. Mill stocks at the end of March amounted to 64,492 tons, against 46,290 tons a month before. This climb in stocks is seasonal, and therefore appears to have little or no significance.

Chemical Pulp

The market for chemical wood pulp is slow at best, and prices are easy. Definite levels of values are lacking, prices being very uncertain and mainly nominal, as buyers are operating in the market only on a very small scale and as sellers in some cases are allowing sharp concessions to dispose of pulp. In other words, sellers so far outnumber buyers in the market at present that it is a difficult matter to ascertain at just how low buyers could operate if they cared to test out producers.

Bleached sulphite of domestic prime grade is reported available at 3 cents a pound upwards f.o.b. pulp mills or ex dock Atlantic seaboard, while No. 1 strong unbleached sulphite of news quality is around 2.50 cents a pound at producing plants, and No. 1 book sulphite about 2.75 cents at pulp mills. Domestic kraft pulp is said to be selling at about 2.50 cents a pound for No. 1 eastern kraft, although southern kraft pulp is reported available down around 2 cents a pound f.o.b. pulp mills.

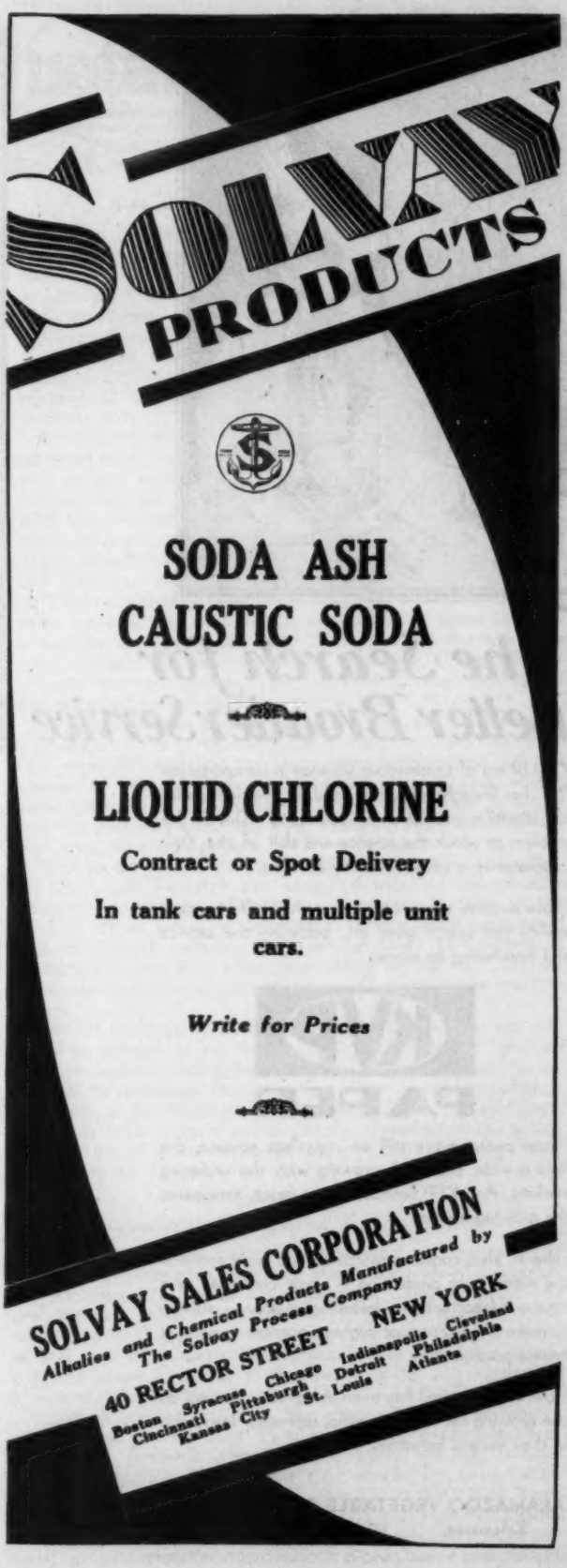
The United States' production of chemical wood pulp in March amounted to 134,892 tons of all grades, compared with 126,105 tons producing in the preceding month, according to identical mills reporting to the American Paper and Pulp Association. Stocks at producing mills at the end of March were 25,162 tons, against 22,080 tons at the end of February.

Quotations f.o.b. pulp mills are as follows:

Bleached sulphite	3.00–4.75
Easy bleaching sulphite	2.55–2.80
Unbleached sulphite, No. 1 strong (news grade)	2.35–2.60
Unbleached sulphite, No. 1 book	2.60–2.85
Soda pulp, bleached (delivered)	3.20–3.40
Mitscherlich, unbleached	3.00–3.25
Kraft, No. 1	2.00–2.75
Screenings, refined	1.60–1.85

Chemicals

Not much change is reported in quotations on papermaking chemicals despite a rather limited demand emanating from consuming quarters. Current movement is restricted largely to contract commitments, it is said, with buyers seldom making their appearance in the market. Casein prices have stiffened slightly to where the range of quotations now is 14 to 15.50 cents per pound, with duty paid on the imported article. Rosin is slightly lower on a basis of 7.50 cents a pound for Grade E for papermaking. Average quotations are on page 599:



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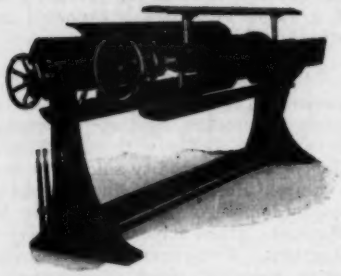

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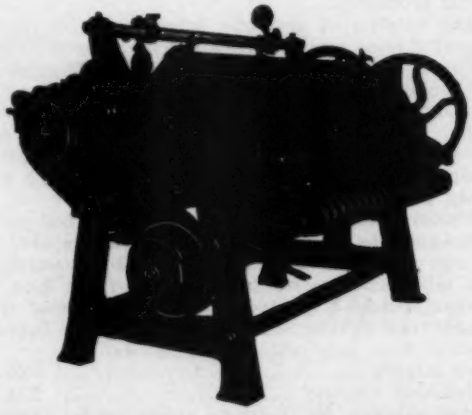

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New Papers

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White sulphite	9–30
Colored rag	15–40
Colored sulphite	8–30
Ledger—	
White rag	16–40
Colored sulphite	10–30
Colored sulphite	8–30
Colored rag	15–40
Bond—	
White rag	16–40
White sulphite	8–30
Colored sulphite	8–30
Colored rag	15–40
Book—	
No. 1 S. & S. C.	5.75– 8.00
Machine finished	5.50– 8.00
English finish	5.50– 8.00
Coated and enameled	7.50–12.00
Lithograph, M. F.	7.50–12.00
Newsprint—	
Rolls, contract, per ton, delivered New York	62.00–
Rolls, transient, per ton, delivered New York	62.00–
Sheets, per ton, delivered New York	67.00–
Side runs, per ton, delivered New York	47.00–52.00
Cover Stock—	
Coated, both sides	–10.25
Coated, one side	–10.15
Tissue—	
No. 1 white, 20x30	.75– .90
No. 2 white, 24x36	.75– .90
No. 1 Manila, 24x36	.75– .80
Kraft	.95– 1.10
Wrapping—	
No. 1 kraft	6.00– 6.50
No. 2 kraft	3.50– 4.50
Southern kraft	3.00– 4.00

Boards—	New York and Chicago
Solid news	37.50–40.00
Straw	50.00–55.00
Plain chip	35.00–37.50
White coated chip	50.00–55.00
Manila coated chip	45.00–50.00
Binder's board	65.00–70.00

Chemicals

(Continued from page 597)

Alum, lump ammonia	3.50 – 3.75
Alum, lump starch	3.75 – 4.00
Blanc fixe, powdered	3.75 – 4.00
Bleaching powder	2.00 – 2.35
Brimstone (long ton, at mine)	18.00 –20.00
Casein (duty paid)	14.00 –15.50
Caustic soda, spot delivery	3.30 – 3.35
China clay, domestic washed	8.00 –13.00
China clay, foreign	15.00 –21.00
Rosin, Grade E	7.50 –.....
Satin white	2.00 – 2.25
Soda ash, 58 per cent light (bags)	1.32½–.....
Starch, papermakers', in bags	3.72 –.....
Talc (ton)	16.00 –18.00

The Paper Industry and the Tariff

Warren B. Bullock, manager of the Import Committee of the American Paper Industry, addressed the New York division of the Salesmen's Association of the Paper Industry at the usual weekly luncheon meeting at the Fraternities Club on Monday, May 26. He discussed the part taken by representatives of the paper industry in the congressional tariff revision hearings, and declared that the paper industry might well be proud of a unique record in the fight over a revision of the tariff which had been waged for eighteen months past.

Mr. Bullock went on to say that the paper industry had emerged from the struggle with no occasion for an investigation of any activities of a lobbying type, with no serious debate over the nature of the tariff changes desired, and with a reasonable increase in those items where experience had shown that the existing law failed to give the domestic paper manufacturer an equal chance with the foreigner for the American market.

"There are about 170 items in the paper schedule. Changes were made in less than thirty, and a few of these involved a high percentage of increase. The principal changes have been changes of phraseology to eliminate ambiguities in the existing law, and to close loopholes through which importers could escape the intent of the law.

"When it became evident that Congress was to undertake a revision of the tariff, the paper industry studied the situation carefully, and laid its plans with deliberation. It was decided to ask no changes except those which facts would show were entirely justified. When changes were asked, it was the policy to seek only such rates as would balance foreign with American prices.

"The result of this policy was that in this long bitter battle the paper industry has emerged with no disagreeable publicity, no charges of lobbying, no serious battles on the floor of either house of Congress. It was early recognized that the paper industry was seeking only the making of scientifically equitable rates, and many leaders in Congress were exceedingly complimentary in their comments on this policy.

"We of the Import Committee are proud that in our five years of service in the field of enforcing existing laws we had accumulated much data of value to the industry in the analysis of proposed changes. No other American industry had such a fact-finding organization, and to its existence, combined with a sane policy of the manufacturers, is due the measure of success attained in the battle which now seems to be nearing its end."

Transatlantic Telephone Rates Reduced

In a general rate reduction, involving all transatlantic telephone conversations between North America and Europe, the American Telephone and Telegraph Company has lowered the rate on each overseas call by $15 for the first three minutes and $5 for each additional minute. On the basis of last year's transatlantic telephone messages, the reduction will mean a saving to the public using the service of approximately $450,000 a year.

Under the revised schedule, the charge for a three minute conversation between New York and London is reduced from $45 to $30. Between New York and Paris, the rate is lowered from $48.75 to $33.75; New York and Berlin, from $50.25 to $35.25; New York and Rome, from $51 to $36; New York and Madrid, from $51 to $36; New York and Stockholm, from $51.75 to $36.75. Rates to other points have been reduced proportionately.

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Bergvik och Ala Nya Aktiebolag, Söderhamm, Sweden
Svanö Aktiebolag, Svanö, Sweden
Aktieselskabet Greaker Cellulosefabrik, Greaker Norway

KRAFT PULP

Nensjö Cellulosa A.—B., Sprängsviken, Sweden
Bergvik och Ala Nya Aktiebolag, Söderhamm, Sweden
Munksunds Aktiebolag, Munksund, Sweden
Kalix Träindustri Aktiebolag, Vanafjärden, Sweden

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CANADIAN KRAFT, LTD.

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Bleached Sulphite—Bleached Soda Pulp
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Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in Sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

EXPORTS

While registering an increase over the shipments in the preceding month, exports of paper and paper products from the United States during March, 1930, showed a considerable decline in point of value as compared with the similar month last year, according to official statistics compiled and issued by the U. S. Department of Commerce in Washington. The total value of paper exports in March amounted to $2,860,624, contrasted with exportations of a value of $2,617,833 in February of this year, and $3,425,821 in March a year ago. Exports during the first quarter of the current year reached a total value of $8,622,385, against $10,145,048 in the same three months last year, representing a decline of approximately 25 per cent.

Exports of newsprint in March were 1,627,016 pounds, valued at $78,187, compared with 2,330,411 pounds of a value of $91,120 in the preceding month, and 3,151,773 pounds of a value of $121,340 in the same month last year. Uncoated book paper exports in March amounted to 3,403,557 pounds, valued at $215,776, contrasted with 2,598,553 pounds of a declared value of $190,704 in the similar month a year ago, while wrapping paper exports were 3,848,278 pounds of a value of $277,196 in March, against 3,662,946 pounds of a value of $237,450 exported last year in the same month. Writing paper exports in March amounted to 1,882,517 pounds, valued at $199,439, showing a decline from the 2,547,235 pounds of a value of $277,047 exported last year, while shipments of sheathing and building papers decreased from a value of $71,395 in March a year ago to $57,508 in the corresponding month this year. Exports of boxboard, and strawboard in March were valued at $103,654, against $80,355 in the same month last year, while exports of other paperboard decreased from a value of $195,005 in March, 1929, to $124,711 in March of the current year. Exports of cover paper climbed from a value of $28,123 in March a year ago to $44,387 last March, and shipments of greaseproof and waterproof paper increased from $35,088 to $53,685, respectively.

IMPORTS

Wood Pulp

Not in a long, long time; perhaps never before, has the market for imported wood pulp been quite so bare of important trade activity as it now happens to be. It can be accurately said that there is scarcely a sale for most classes of chemical pulp; paper and board manufacturers not only are evincing little or no desire to buy, but they are in numerous instances sellers themselves, by which is meant that they have surplus supplies of pulp which they are eager to dispose of in the market rather than carry the raw material until such time as they may require it. Thus, the market today is overburdened with sellers, with almost nary a buyer in sight; importers and agents report that they are meeting with scant success in their efforts to effect sales, and that even offerings at what would appear to be very attractive low prices seldom elicit any response from consumers.

The whole situation, of course, is based on the rather heavy purchasing by American paper mills some months ago when the present slump in business was not foreseen and when anticipated requirements were much larger than they have proved to be. A good many paper mills now are loaded up with pulp, have additional stocks in store, and further supplies on the way from primary sources abroad, and it is not surprising in view of conditions within the paper industry that some manufacturers are endeavoring to liquidate portions of their pulp holdings. Prices have continued to recede, and are now on the lowest levels that have been known in years; in fact, it would appear as if market rates have been forced unreasonably low by the pronounced pressure from some quarters to sell pulp.

Kraft continues in a weak quotable position, with reports telling of some Scandinavian kraft of prime quality available at 1.90 cents per pound ex dock American Atlantic seaboard, and with even under this price mentioned as a possible buying level. Bleached sulphite is easy in price, too, with prime bleached reported in the market at 3 cents a pound ex dock New York, and with buyers manifesting very little interest even at this price basis. Strong prime unbleached sulphite is about 2.50 cents a pound ex dock Atlantic ports, prime easy bleaching 2.70 cents, and ordinary Mitscherlich sulphite 2.50 cents. Scandinavian groundwood is quoted at $33 per short ton Atlantic seaboard for dry and $31 for moist pulp.

After attaining record-breaking proportions during January and February of this year, the March importations of chemical wood pulp recorded a sharp decrease, according to official U. S. Department of Commerce figures. During March a total of 91,037 long tons of chemical wood pulp, valued at $5,416,015, was imported, contrasted with 159,645 tons of a declared value of $8,811,936 imported in February last, 153,092 tons of a value of $8,570,986 in January this year, and 75,959 tons of a value of $4,327,479 in March last year. Thus, the March receipts were some 68,000 long tons less than was imported in the preceding month, and were 62,000 tons below the arrivals in January last. The March imports brought the total of chemical pulp into the U. S. in the first three months of the current year up to 403,774 tons, giving a monthly average of 134,591 tons, and showing a big increase over the monthly average of 105,527 tons imported in the corresponding period of 1929. March imports of groundwood were 24,401 long tons, valued at $714,656, compared with 34,915 tons of a value of 966,169 in February, while imports in the first three months of this year totaled 84,694 tons, against 50,482 tons in the same time a year ago.

Current market quotations ex dock New York, and receipts at the port of New York during May, 1930, follow:

Bleached sulphite, No. 1	3.00– 4.25
Unbleached sulphite, strong No. 1	2.50– 2.75
Unbleached sulphite, No. 2	2.30– 2.50
Easy bleaching sulphite	2.70– 2.90
Mitscherlich unbleached, genuine	2.85– 3.00
Mitscherlich unbleached, ordinary	2.50– 2.65
Kraft, standard Swedish	1.90– 2.10
Groundwood, per ton (dry)	33.00–34.00

Price & Pierce, Ltd., 1,400 bls. from Wallvik and 350 Gothenburg; Castle & Overton, 1,346 bls. from Hamburg; E. J. Keller Co., 1,028 bls. from Hamburg and 250 Oslo; A. P. W. Paper Co., 7,514 bls. from Chandler, Que., and 7,416 from Sheet Harbor, N. S.; J. Anderson & Co., 3,235 bls. from Greaker, 303 Hamburg and 2,460 Oslo; Lagerloef Trading Co., 609 bls. from Kotka, 1,850 Helsingfors and 127 Bremen; M. Gottesman & Co., 3,150 bls. from Stockholm; Pagel, Horton & Co., 3,500 bls. from Gefle; Bulkley, Dunton & Co., 2,875 bls. from Gefle and 750 Iggesund; Central National Bank, 750 bls. from Iggesund; E. M. Sergeant Co., 600 bls. from Oslo and 1,547 Gothenburg; Atterbury Bros., 2,500 bls. from Oslo; Guaranty Trust Co., 1,800 bls. from Sundsvall; Scandinavian Pulp Agency, 350 bls from Sundsvall; National City Bank, 2,000 bls. from Oslo; Irving Trust Co., 480 bls. from Bremen; Parsons & Whittemore, 120 bls. from Gothenburg; International Acceptance Bank, 300 bls. from Oslo; Bank of New York & Trust Co., 300 bls. from Oslo; Kidder, Peabody & Co., 91 bls. from Gothenburg; Order, 400 bls. from Tofte, 952 Hamburg and 1,862 Kotka.

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PAPER

Paper Stock

The United States imported 33,066,196 pounds of papermaking rags, valued at $693,327, in March, contrasted with imports of 26,630,269 pounds of a value of $511,797 in the preceding month, and making a total of 98,553,531 pounds for the first quarter of this year, against 93,162,102 pounds in the same three months of 1929, according to official statistics issued by the U. S. Department of Commerce. Imports of waste bagging and waste paper in March were 10,588,052 pounds, and for the first three months of this year 30,242,018 pounds, contrasted with 33,373,423 pounds in the similar period a year ago, while importations of old rope and miscellaneous paper stock in the first three months of the current year amounted to 31,056,956 pounds, compared with 16,781,029 pounds a year ago.

Imports of papermaking materials in May were moderately large, judging from receipts through the port of New York. Arrivals of all kinds of paper stock excepting wood pulp at that port last month, these data being taken from manifests of steamers reaching New York during the month, were as follows:

Old Rope—William Steck & Co., 330 coils and 39 bls.; Brown Bros. & Co., 1,014 coils and 466 bls.; United Fruit Co., 2 bls.; Banca Commerciale Italiana Trust Co., 73 bls.; International Purchasing Co., 490 coils and 39 bls.; International Trust Co., 39 bls. and 31 coils; Irving Trust Co., 56 coils; Order, 402 coils and 35 bls.

Old Bagging—E. Butterworth & Co., 65 bls.; T. D. Downing & Co., 97 bls.; Harmon G. Lichenstein, 366 bls.; Banca Commerciale Italiana Trust Co., 292 bls.; Ernst Mayer, 95 bls.; Van Oppen & Co., 132 bls.; Arkus, Inc., 67 bls.; Chemical Bank & Trust Co., 94 bls.; Fidelity Trust Co., 59 bls.; Darmstadt, Scott & Courtney, 455 bls.; Order, 153 bls.

Rags—Darmstadt, Scott & Courtney, 477 bls.; J. Reiss & Co., 17 bls.; I. Goldberg, 32 bls.; Robert Blank, 178 bls.; Alexander H. Searle, Inc., 70 bls.; S. Birkenstein & Sons, 336 bls.; C. Avertez, 48 bls.; Arkus, Inc., 40 bls.; Albany Fibre Co., 46 bls.; H. Burrows, 17 bls.; American Overocean Corp., 10 bls.; E. O'Donoghue & Sons, 49 bls.; George M. Graves Co., 181 bls.; Ernst Mayer, 6 bls.; Harmon G. Lichtenstein, 209 bls.; A. Hurst & Son, 139 bls.; Victor Galaup, Inc., 150 bls.; Daniel M. Hicks, Inc., 81 bls.; Castle & Overton, Inc., 496 bls.; Alfred Bunge, 10 bls.; Fritz Stern, 261 bls.; George W. Millar & Co., 315 bls.; N. Schwab & Sons, 39 bls.; E. J. Keller Co., 467 bls.; Guaranty Trust Co., 58 bls.; International Trust Co., 264 bls.; Chemical Bank & Trust Co., 435 bls.; Fidelity Trust Co., 304 bls.; Philadelphia National Bank, 13 bls.; French-American Banking Corp., 10 bls.; New York Trust Co., 54 bls.; Chase National Bank 29 bls.; Kidder Peabody Acceptance Corp., 33 bls.; Baring Bros. & Co., 41 bls.; Amtorg Trading Co., 1,937 bls.; The Barrett Co., 216 bls.; Brown Bros. & Co., 1,302 bls.; A. W. Fenton, Inc., 183 bls.; American Express Co., 488 bls.; C. R. Spence & Co., 233 bls.; Van Oppen & Co., 15 bls.; R. F. Downing & Co., 422 bls.; Order, 1,306 bls.

Miscellaneous Paper Stock—Daniel M. Hicks, Inc., 41 bls.; R. M. Gray, Inc., 63 bls.; J. Cohen & Sons, 59 bls.; Milton Snedeker Corp., 136 bls.; Equitable Trust Co., 351 bls.; Anglo-South American Trust Co., 173 bls.; First National Bank, 50 bls.; Baring Bros. & Co., 53 bls.; Irving Trust Co., 220 bls.; Castle & Overton, 193 bls.; George W. Millar & Co., 97 bls.; Chemical Bank & Trust Co., 51 bls.; E. Butterworth & Co., 85 bls.; J. A. Steel, 90 bls.; Order, 314 bls.

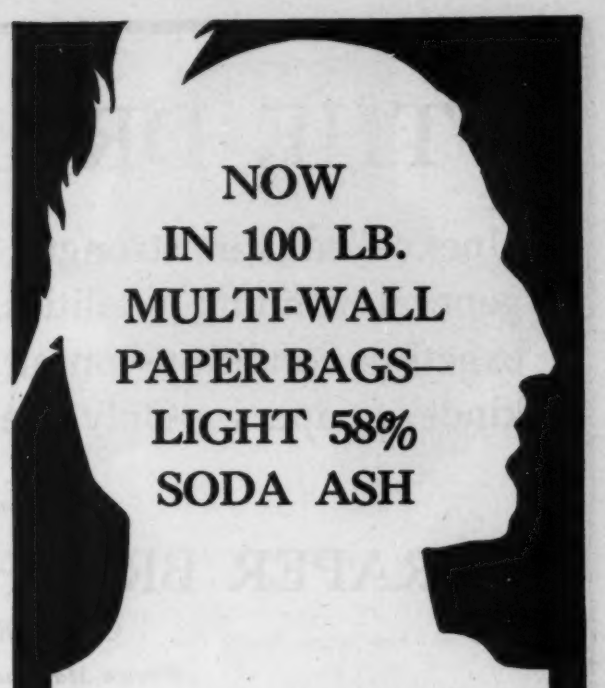
Paper

Imports of paper into the United States in March, 1930, amounted in value to $12,410,732, showing an increase over the importations valued at $10,367,617 in the preceding month, but a slight decline as compared with imports of a value of $12,624,738 in March a year ago, according to official U. S. Department of Commerce figures. Imports during the first three months of the current year reached a value of $36,128,493, contrasted with receipts of a value of $37,786,549 in the corresponding time last year.

Paper imports in May were of fair volume, taking arrivals at the port of New York as a criterion. Receipts of paper of all kinds at that port last month, these data being taken from manifests of vessels reaching New York during the month and therefore unofficial, were as follows:

Printing—Guaranty Trust Co., 65 bls. from Hamburg; T. N. Fairbanks, 50 cs. from Genoa; P. C. Zuhlke, 113 cs. from Antwerp and 2 cs. Bremen; C. Steiner, 15 cs. from Bremen; Lunham & Reeve, 369 reels from Kotka; E. Dietzgen & Co., 153 cs. from Rotterdam and 17 cs. Hamburg; Keuffel & Esser Co., 159 reels from Hamburg; Stora Kopparberg Corp., 264 reels from Gothenburg; Bank of Montreal, 10,262 rolls from Corner Brook; Perkins-Goodwin Co., 797 reels from Hamburg and 490 reels Bremen; Fidelity Trust Co., 44 rolls from Hamburg; Oxford University Press, 8 cs. from Liverpool; P. H. Petry & Co., 115 reels from Gothenburg; W. H. Bell, 3,513 rolls from Liverpool, N. S.; A. S. Zabriskie, 74 reels from Hamburg; Order, 724 reels and 41 cs. from Kotka, 2,087 reels and 24 cs. Bremen, 87 reels and 47 bls. Hamburg, and 889 reels and 132 bls. Oslo.

Wrapping—Wilkinson Bros. & Co., 12 cs. from Genoa; Sylvania Industrial Corp., 180 cs. from Antwerp; Borregaard Co., 498 reels and 51 bls. from Gothenburg; E. Dietzgen & Co., 81 cs. from Rotter-



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dam, 19 cs. Hamburg and 2 cs. Antwerp; Insight Paper Co., 191 reels from Oslo; F. L. Kraemer & Co., 177 bls. from Gothenburg; F. C. Strype, 13 cs. from Antwerp; Standard Products Corp., 2 rolls and 9 cs. from Antwerp; D. S. Walton & Co., 24 rolls from Gothenburg; C. Steiner, 17 cs. from Rotterdam; Irving Trust Co., 6 bls. from Hamburg; Order, 9 bls. from Hamburg, 14 cs. Antwerp and 3 cs. Rotterdam.

Cigarette—DeMaudult Paper Corp., 671 cs. from Havre and 726 cs. St. Nazaire; P. J. Schweitzer, Inc., 87 cs. from Marseilles; Standard Products Corp., 442 cs. from Havre; British-American Tobacco Co., 40 cs. from Barcelona, 7 cs. Southampton and 3 cs. Havre; Graham Paper Co., 30 pkgs. from Barcelona; Gluckmann & Strauch, 10 cs. from Havre; H. Strauss, 121 cs. from Havre; American Tobacco Co., 400 cs. from Bordeaux; Order, 157 cs. from Marseilles.

Writing—J. H. Faunce, 10 cs. from Havre; Guibont Freres & Co., 14 cs. from Havre and 3 cs. Southampton; F. L. Kraemer & Co., 4 cs. from Southampton; Bloomingdale Bros., 2 cs. from Bremen.

Filter—H. Reeve Angel & Co., 20 cs. from London and 49 cs. Southampton; J. Manheimer, 106 bls. from Southampton; A. Giese & Son, 110 bls. from Southampton; E. Fougera & Co., 111 bls. from Southampton; C. Sleicher & Scholl Co., 24 cs. from Hamburg.

Tissue—Atlantic Forwarding Co., 9 cs. from Liverpool F. C. Strype, 73 cs. from Helsingfors; Neidich Process Co., 124 cs. from Helsingfors; W. J. Byrnes & Co., 9 cs. from Southampton; F. B. Vandegrift & Co., 10 cs. from Liverpool; D. C. Andrews & Co., 3 cs. from Liverpool; Baldwin Universal Co., 5 cs. from Liverpool; G. W. Sheldon & Co., 3 cs. from London.

Hanging—F. J. Emmerich & Co., 22 bls. from Hamburg, 13 cs. Liverpool and 3 cs. Havre; C. A. Haynes & Co., 36 cs. from London and 11 cs. Liverpool; Globe Shipping Co., 12 bls. from Hamburg; Irving Trust Co., 18 cs. from Hamburg; R. F. Downing & Co., 11 cs. from Southampton; G. J. Hunken & Co., 5 bls. from Bremen; International Mercantile Marine Co., 7 cs. from Southampton; J. E. Bernard & Co., 2 cs. from Bremen, 7 bls. Southampton, 11 bls. Hamburg, 4 bls. Liverpool and 12 cs. Gothenburg; Guaranty Trust Co., 17 cs. from Hamburg; F. L. Kraemer & Co., 10 cs. from Southampton; F. G. Prager & Co., 85 reels from Antwerp; Order, 12 bls. from Hamburg.

Photo—J. H. Schroder Banking Corp., 72 cs. from Bremen; Globe Shipping Co., 126 cs. from Bremen; Gevaert Co. of America, 196 cs. from Antwerp; J. J. Gavin & Co., 6 cs. from Southampton; Medo Photo Supply Co., 7 cs. from London.

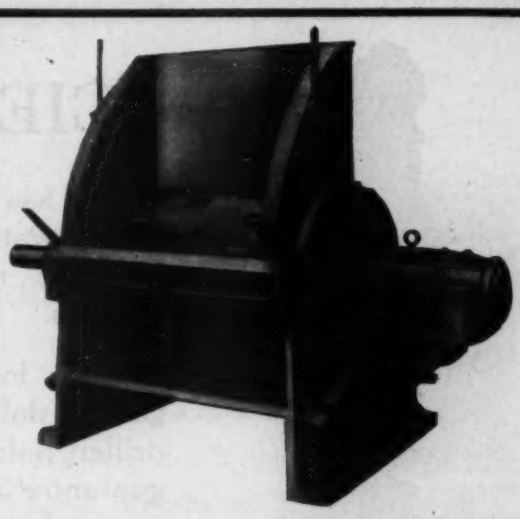
Board—Lagerloef Trading Co., 134 bls. and 96 reels from Helsingfors; Summit Paper Co., 16 rolls and 5 cs. from Rotterdam; Chatham & Phenix National Bank, 11 bls. from Gothenburg; American Express Co., 200 cs. from Hamburg; Walker Goulard Plehn Co., 204 rolls from Rotterdam; Houbigant, Inc., 44 cs. from Havre; Progressive Fibre Specialty Co., 27 bls. from Gothenburg; Order, 32 bls. from Hamburg.

Miscellaneous—D. C. Andrews & Co., 22 cs. from Havre and 4 cs. Hamburg; F. Murray Hill, Inc., 8 cs. from Bremen; S. Gilbert, 50 cs. from Bremen; Hensel, Bruckmann & Lorbacher, 80 cs. from Bremen, 20 cs. Hamburg and 5 cs. Havre; E. Henningson, 9 bls. from Bremen; Keller-Dorian Paper Co., 32 cs. from Havre; Japan Paper Co., 6 cs. from Havre, 63 cs. Genoa, 5 cs. Southampton and 3 cs. London; Meadows, Wye & Co., 2 cs. from Havre; P. H. Petry & Co., 4 bls. from Havre; Brown Bros. & Co., 3 cs. from Hamburg; Pacific National Bank, 16 cs. from Hamburg; Henschel, Naeve & Co., 14 bls. from Bremen; J. Bleckhardt & Co., 7 cs. from Bemen; G. W. Sheldon & Co., 2 cs. from Havre and 3 cs. Southampton; International Acceptance Bank, 6 cs. from Canton; B. F. Drakenfeld & Co., 25 cs. from Liverpool; S. Bienfang, 7 cs. from Rotterdam; Causon & Montgolfer, 45 cs. from Havre; C. A. Redden, 22 cs. from Havre; Whiting-Patterson Co., 11 bls. from Southampton; Van Oppen & Co., 31 cs. from Genoa; Atlantic Forwarding Co., 16 cs. from Hamburg; American Express Co., 85 cs. from Havre and 8 cs. Hamburg; R. F. Downing & Co., 4 cs. from Havre; International Forwarding Co., 10 cs. from Bremen, 25 cs. Rotterdam, 7 cs. Antwerp, 8 rolls Glasgow, 2 cs. Liverpool and 13 cs. Hamburg; Independent Forwarding Co., 12 cs. from Bremen; Central Hanover Bank & Trust Co., 35 cs. from Hamburg; Heemsoth & Basse, 8 cs. from Hamburg and 33 bls. Rotterdam; W. J. Byrnes & Co., 3 cs. from Hamburg; Walker Goulard Plehn Co., 12 bls. from Rotterdam; Tice & Lynch, 3 cs. from London and 3 cs. Bremen; Irving Trust Co., 24 cs. from Yokohama; Borden & Riley Paper Co., 23 cs. from Antwerp; D. F. Young, 3 cs. from Liverpool; E. Dalber, 7 cs. from Antwerp; P. C. Zuhlke, 8 cs. from Bremen and 29 cs. Antwerp; T. N. Fairbanks, 7 cs. from Havre; Coenca-Morrison Co., 13 cs. fom Havre; Dingelstedt & Co., 2 cs. from Bremen and 13 cs. Rotterdam; F. L. Kraemer & Co., 14 cs. from Bremen and 3 cs. Southampton; F. C. Strype, 14 cs. from Yokohama; Johaneson, Wales & Sparre, 18 reels from Gothenburg; Public National Bank, 40 cs. from Marseilles; Durex Abrasive Corp., 139 pkgs. from Antwerp; W. A. Foster, 3 cs. from London and 10 cs. Glasgow; Davies, Turner & Co., 6 cs. from Hamburg; Bendix Paper Co., 12 cs. from Hamburg.

Paper Famine in Russia

A recent despatch to the United Press from Russia brings a new note into the chorus of "overproduction" that is echoing throughout this country. The Soviet Union is suffering from a shortage of paper, according to this report, which is seriously impeding the growth of newspapers and book publications.

At a recent conference of representatives of the paper industry in that country, it was learned that the soviet newspapers alone need 50 per cent more paper than the government mills can supply this year. The book publishers made the same complaint. At this conference, plans were worked out for raising the total production for the current year by 50,000 tons above the original program. Even that, however, it is said will scarcely solve the immediate problem.



M&M Shredders are designed and built to handle practically every kind of paper stock—including kraft, sheet sulphite, machine broke, lap and roll stock, and old books and magazines.

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1013 Tilden St. Saginaw, Mich.
Builders of machinery since 1854

Lawrence "Vortex" Sureflo Pumps

for pulp and thick stock

For modern and dependable paper stock pumps engineers are today specifying Lawrence "Vortex" SUREFLO Pumps, because the SUREFLO principle has proven in actual service its ability to handle pulp and thick stock of high consistency, coarse refuse, stringy material, etc. with continuous ease and unusual efficiency.

WHERE DEPENDABILITY IS THE FIRST CONSIDERATION—you will find the Lawrence "Vortex" SUREFLO Pumps.

The SUREFLO pump is made in the Horizontal Shaft type as well as the Vertical.

You will find complete description and valuable data in bulletin D-35.

Lawrence Pump & Engine Co.
P. O. Box 70, Lawrence, Mass.
New York Office, 90 West St.

SCIENCE vs. LUCK

Layne has eliminated the element of chance in the water producing business by applying scientific methods to construction of well systems.

It is no longer necessary for Paper Mills to gamble dollars away in a game where the well driller holds high hand. LAYNE contracts guarantee a specified amount of water—you cannot lose.

Play Safe! Write for bulletins

Layne & Bowler, Inc.

MEMPHIS TENNESSEE

Offices in Principal Cities

APMEW EQUIPMENT RETURNS ITS COST EVERY FEW MONTHS TO MANY USERS

Would your Company like to have it produce similar earnings in your mill?

See PAPER AND PULP MILL CATALOGUE page 306 for our catalogue and WRITE FOR INFORMATION.

APMEW Pulp Screens
" Paper Machine Screens
" Fine Screens
" Continuous Filters, Pulp Washers, Thickeners and Save-Alls.
" Rotary Sulphur Burners
" Centrifugal Stock Pumps

American Paper Machinery and Engineering Works

GLENS FALLS, NEW YORK

Canadian Manufacturer—Paper Mill Equipment, Ltd., 413 Drummond Building, Montreal, Que.
Pacific Coast Representative, K. B. Hall, Portland, Oregon

WOOD TANKS

of Red Gulf Cypress
(The Wood Eternal)

We are equipped to make these tanks, either straight or tapered, in any size desired from 100 gallons to 100,000 gallons capacity, of Genuine Red Gulf Cypress, Douglas Fir, Long Leaf Yellow Pine, and other woods suitable for tanks.

Let us know your requirements

The Hauser-Stander Tank Co.

CINCINNATI, OHIO

"We Win With Quality"

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 45009—Newsprint paper. Rio de Janeiro, Brazil. Agency desired.

No. 45017—Gummed paper tape, 1,500 rolls per month. Tokio, Japan. Purchase desired.

No. 45089 — Papermaking machinery. Turku, Finland. Agency desired.

No. 45048—Paper cup making machinery. Madrid, Spain. Agency desired.

No. 45214—Bags, glassine, 2-ounce size. Ottawa, Canada. Purchase desired.

No. 45175—Paper cups and dishes, for ice cream service. Gibraltar. Purchase desired.

No. 45252—Rosin, for paper mills. Helsingfors, Finland. Agency desired.

No. 45349—Banknote, carbon, and wax papers. Mukden, China. Agency and purchase desired.

No. 45255—Paper boxes, cheap; writing tablets, and cellulose paper. Santurce, P. R. Agency desired.

No. 45344—Paper box making machinery. Maracaibo, Venezuela. Purchase desired.

No. 45344—Cardboard. Maracaibo, Venezuela. Purchase desired.

No. 45350—Machinery for manufacturing small paper cartons. Medan, Sumatra. Purchase desired.

No. 45279—Paper cups, drinking and for jams, jellies and preserves. Havana, Cuba. Agency desired.

No. 45287—Paper cups, soda straws and service dishes. Tegucigalpa, Honduras. Purchase desired.

No. 45340—Envelopes, cloth-lined. Cairo, Egypt. Agency desired.

No. 45451—Letter paper. Prague, Czechoslovakia. Purchase desired.

No. 45343—Packing paper, transparent, similar to glassine paper. Hamburg, Germany. Agency desired.

No. 45341—Roofing paper, Mazatlan, Mexico. Agency and purchase desired.

No. 45294—Wallpapers. Montreal, Canada. Agency desired.

No. 45375—Writing paper, envelopes, blotting paper, etc. Alexandria, Egypt. Agency desired.

No. 45451—Art paper, chroma boards, sulphite bond, manifold, kraft, newsprint, and banknote paper. Shanghai, China. Purchase and agency desired.

No. 45513—Paper boxes, and printed soap wrappers. Guatemala City, Guatamala. Purchase desired.

No. 45380—Newsprint, bond and colored paper. Medan, Sumatra. Purchase desired.

U. S. Leads World in Telephone Development

The United States not only has more than half of the world's telephones, but computed by population it also has ten times as many as Europe or the world as a whole, according to the latest telephone census. This compilation of telephone and telegraph statistics, recently published by the American Telephone and Telegraph Company, shows a total of 32,712,284 telephones in the entire world.

Of these, 19,341,295, or 59 per cent, were in the United States. On the same date Europe had 9,236,685 telephones and the remaining 13 per cent., were distributed throughout the rest of the world. During 1929 the number of telephones in the world increased by 1,726,908, about one-half of the increase resulting from telephone development in the United States alone.

Hercules Powder Co., Wilmington, Del., announces that the carload price on FF wood rosin, as of June 5th, is $5.45 per 280 lbs., f. o. b. Brunswick, Ga., or Hattiesburg, Miss.

AMIJEL

A new Starch beater-size, requires no cooking. Permits use of lower steam pressure in drying cans. Produces finer grain in paper. Improves surface of the sheet. Make a practical test and note the improvement in your sheet.

CORN PRODUCTS REFINING CO.
17 Battery Place New York City

RUSS GELATIN CO.
WORKS—WESTFIELD, MASS.
MANUFACTURERS OF
GELATIN and GLUE
ANIMAL SIZING GLUE STOCK
LARGEST SPECIALISTS IN AMERICA ON
FINE WRITING PAPER SIZING
E. F. RUSS COMPANY 287 Atlantic Avenue BOSTON, U. S. A.

Pickles' Patent
Automatic Steam Regulator
FOR
Paper Making Machines
Which absolutely control the drying of the sheet. Installed on sixty days' trial
W. F. PICKLES Buckland, Conn.

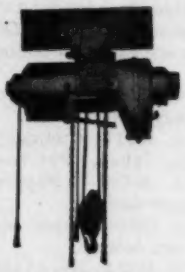
MARION Dolly—designed for the paper industry

Easily handles rolls and cases up to 4000 pounds. Stays put while one man loads and unloads from sides or ends. Turns on a dime. Manipulated with ease. There's a model for every condition—and they're built to *last*. Hundreds in use. *Money back if you're not satisfied.* Write today for prices and literature.

MARION MALLEABLE IRON WORKS
924 Miller Avenue, Marion, Indiana

Six models—low wheel, high wheel and flat top—a model for every purpose.

Maris Electric Hoists



Maris electric hoists are simple in design, rugged in construction, safe in operation and the interchangeability of parts reduces the stock of repair parts to the minimum.

Maris electric hoists are the most simple in design on the market. All parts are unit built, accessible and positive in operation. It was only after twenty years of material handling in all its phases that Maris Brothers decided upon this design that would give the public that 100% service that characterized other Maris products.

For maximum service with minimum repairs call in a Maris engineer. He is always ready to help solve your material handling problems.

MAINTENANCE the true test of QUALITY

MARIS Overhead Electric Cranes
MARIS Hand Cranes, All Types
MARIS Simplified Electric Hoist
MARIS Monorail Systems, Hand and Electric
MARIS Self-aligning Monorail Trolleys
MARIS Self-lubricating Chain Hoist

MARIS Bros., Inc.

5530 Grays Ave. Philadelphia, Pa.

This leaflet sent on request describes the pumps which since their recent introduction are proving their advantages in more than thirty different Paper Mills.

ALLIS-CHALMERS MANUFACTURING CO.
MILWAUKEE, WIS. U.S.A.

Paper Cases Before Customs Court

The June docket of the United States Customs Court will probably schedule for trial upwards of 800 cases involving the imposition of an additional duty of 10 per cent for special finish on writing paper and papeterie. Additional duty was collected on all these shipments, but protest was made to the Customs Court of the claim that the paper was not specially finished as held by the customs authorities. While the test case decided some months ago was pending, all of these cases were suspended and are now coming up for trial. It is not known whether the importers will seek trial of their various importations on the claim that the issue is different from that in the test case, or whether they will abandon the cases by acceptance of the ruling on the case taken as a precedent. Every case which goes to trial will require the taking of testimony to determine whether the paper is specially finished in accordance with the terms of the tariff act. If any of these cases go to trial the Import Committee of the American Paper Industry will assist the government in securing evidence to sustain the claim of a special duty, as it did when the original test case was tried.

An importer of kraft wrapping paper shipped from Sweden to San Juan, Porto Rico, has at last abandoned his protest against a claim of undervaluation which the Import Committee recorded in 1925. The case was scheduled for trial in the United States Customs Court twenty-eight times before the importer finally decided to abandon the fight. This case is mentioned as an example of the manner in which the Import Committee functions at every port of entry in the United States, and that it does not confine its efforts to the larger ports.

Japanese silk wall hangings were held dutiable at 50 per cent as manufactures of silk, instead of wall paper at 1½ cents per pound and 20 per cent as claimed by the importers. Imitation hand made paper is being held subject to 10 per cent additional duty because of its decoration with laid lines. Stencil tissue paper is now being held dutiable as paper not specially provided for at 30 per cent, instead of as coated paper at 5 cents per pound and 20 per cent as claimed by the importers, who say the paper is coated not saturated. Special drawing paper is being held dutiable at the United States value, because made specially for the American market, and in addition is subject to 10 per cent additional duty for special finish.

Importers who had protested to the Customs Court against rates of duty levied by customs officials have abandoned their efforts in cases involving three shipments of papeterie, one of suitcase board, two of filter paper and one of fancy paper.

Imported paper napkins are being held dutiable at 35 per cent as manufactures of paper, instead of a lower rate of duty as tissue paper.

An importer of fancy drawing paper is endeavoring to have his shipment classified for duty as boxboard, at 10 per cent, but the customs officials held it to be dutiable at 3 cents per pound and 25 per cent.

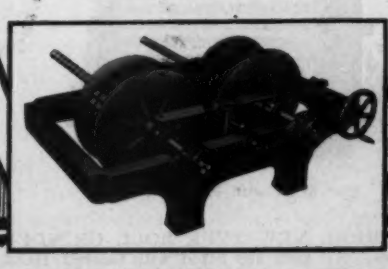
Thirteen importations of envelopes for lithographed greeting cards are claimed by the importer to be free of duty as the customary containers for lithographic merchandise. The customs officials, however, held the envelopes to be dutiable as envelopes made of writing paper.

The third annual outing of the Roessler & Hasslacher Chemical Company, of New York, held at Narragansett Inn, Lindenhurst, Long Island, on Saturday, May 24, was greatly enjoyed by 160 employees of the firm. The program was a varied one, including a baseball game between the single and married men, running races and a tug-of-war. Luncheon and dinner were served and a short address was made by Milton Kutz, executive vice-president in charge of the New York office. Many members of the company attended from the Brooklyn warehouse and the branch offices. The committee in charge consisted of Miss R. Zundell, R. Schmidt, J. F. Schwarz, and W. Friesendorf.

The Terry Steam Turbine Co., Hartford, Conn., announces that S. O. Maxwell has been appointed district manager of its New York office.

This Lewellen transmission is one of a large number in a roofing manufacturing plant. Wherever paper products are made, Lewellen transmissions are helping to make them. Accurate variable speed control is of utmost importance in modern production and is particularly necessary in the making of paper products. Cutters, double backers, corrugators, rewinders, in short, wherever speeds must be accurately varied at will, the Lewellen is indispensable. Lewellen users are our best advertisements.

The new Lewellen catalog No. 25 will give you valuable information on your variable speed control problems. May we send it to you?



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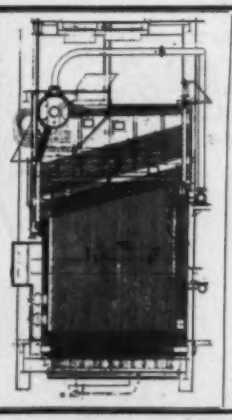

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BOILERS AND WATER WALLS
Sectional—All Steel
All Sizes—All Pressures

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SPRINGFIELD, ILLINOIS

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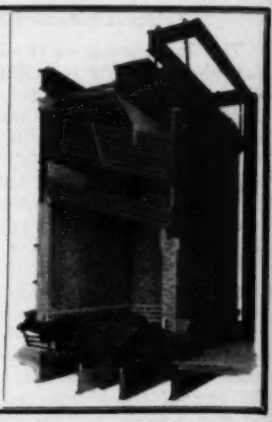
Chicago, New York, Boston, Philadelphia, Richmond, Atlanta

SALES OFFICES:
Pittsburgh, Kansas City, Minneapolis, Cincinnati, Houston, St. Louis

REPEAT ORDERS CONSTITUTE THE LARGEST PART OF OUR BUSINESS.



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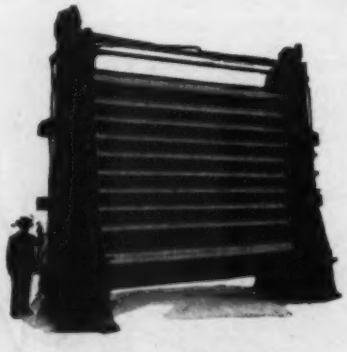

178" Stack with Hydraulic Lift

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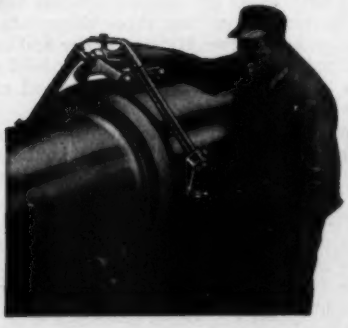

Farrel Indicating Roll Caliper

FARREL NEW TYPE ROLL GRINDER is electrically driven throughout, and is made in 24", 32", 36" and 42" sizes. All sizes are fitted with Geared Head, New Crowning Device and Automatic Lubrication.

FARREL CALENDERS are equipped with Electric, Hydraulic or Ratchet Lift, all operated from the floor.

FARREL ROLLS are made as large as 298" on the face. Known all over the world.

FARREL INDICATING ROLL CALIPER is extremely accurate. The majority of the parts are made of aluminum alloy, making a light weight instrument. Rolls may be calipered to the end of the face without reversing the caliper.

FARREL-BIRMINGHAM COMPANY, INC.
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Successor to: Farrel Foundry & Machine Co., Ansonia, Conn., Est. 1848.
Birmingham Iron Foundry, Derby, Conn., Est. 1836.